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SUBJECT-MATTER INDEX

OF

PATENTS APPLIED FOR AND PATENTS GRANTED,

FOR THE YEAR 1870.

15 & 16 VICTORIÆ, Cap. 83. Sec. XXXII.

SUBJECT-MATTER INDEX

OF

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For the Year 1870.

Printed and Published by Order of the Commissioners of Patents,

UNDER THE

ACT of 15 & 16 VICTORIÆ, Cap. 83. Sec. XXXII.

BY BENNET WOODCROFT,

CLERK TO THE COMMISSIONERS OF PATENTS.

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OF

PATENTS APPLIED FOR AND PATENTS GRANTED,

For the Year 1870.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ACCIDENTS (*Prevention of*).			
Machines for bottling soda-water and other gaseous or effervescing liquids. - - - (*Partly communicated by Gustavus Davis Dows.*)	102	12th Jan. 1870	Adolphus Clark. Abraham Van Winkle.
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion.	175	20th Jan. 1870	James Maze Kilner.
Mowing and reaping machines - - - (*cutter guard.*) (*Communicated by George Washington Newton Yost, Franklin William Andrews, Lyman Stewart and Henry Allerton Hutson.*)	213	22nd Jan. 1870	William Robert Lake.
Application of inextinguishable signal lights for marine and other purposes. (*or forming parts of life buoys, &c.*) (*Partly communicated by Ferdinand Silas.*)	301	2nd Feb. 1870	Nathaniel John Holmes.
An improved automatic apparatus for producing carbonic acid for the manufacture of effervescing or gaseous liquids, and for the application of such liquids to various purposes. (*for throwing on fires.*) (*Communicated by Anet Jaques Nadaud.*)	305	2nd Feb. 1870	William Robert Lake.
Life buoys - - - - -	345	7th Feb. 1870	John Tyndale Greenfield.
Fire-escapes - - - - -	431	14th Feb. 1870	William Larking.
Improved safety apparatus for locomotives and brake wagons.	454	16th Feb. 1870	Laurence Hill.
Means of preventing the bursting of water pipes by the action of frost.	480	18th Feb. 1870	Clement Heaton.
Apparatus for working and locking or securing railway points and signals. - - -	569	25th Feb. 1870	John Saxby. John Stinson Farmer.
Improved apparatus for preventing accidents in the pits of mines or collieries.	591	28th Feb. 1870	Thomas Thomas.
Apparatus for giving alarm when the water in steam-boilers is below the proper level.	595	1st March 1870	John Parkinson.
Railway carriages - - - - -	613	2nd March 1870	James Harman.
Boiler fittings - - - - - (*preventing explosions of kitchen or house boilers.*)	634	3rd March 1870	William Henry Bailey.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ACCIDENTS—*continued.*			
Construction of safety lamps used in mining, colliery and other underground operations.	645	4th March 1870	James Allison Hogg, the younger.
Improved apparatus for generating steam or elastic vapours for actuating motive-power engines. (*Communicated by Jean Baptiste Givord.*)	691	8th March 1870	William Edward Newton.
Improvements in maintaining, controlling and registering the pressure in hydraulic presses, and in apparatus connected therewith.	785	16th March 1870	Francis Virtue.
An improved apparatus for preserving life from fire.	812	18th March 1870	William Friar.
Hoists - - - - - - -	957	1st April 1870	Charles Newhouse.
Means or arrangements for the safety and convenience of railway passengers.	963	2nd April 1870	Joseph Chrimes.
Improvements applicable to winding engines for the prevention of winding over the headstocks, also applicable to other stationary engines where the weight is taken off suddenly.	1011	6th April 1870	James Sharrocks.
An improved apparatus to be used in window cleaning and for other similar purposes.	1038	8th April 1870	Charles Francis Anderson.
Improvements applicable to fire-places, stoves and grates for ensuring safety against fire and the prevention of smoky chimneys.	1067	12th April 1870	Lewis William Thomas.
Bedsteads whereby they may be rendered available as an escape in case of fire.	1085	13th April 1870	Charles Hamilton.
Improved apparatus to be employed in the performance of gymnastic exercises. (*elastic safety apron.*) (*Communicated by William Hanlon.*)	1114	16th April 1870	Henry Edward Newton.
Safety apparatus for steam boilers - -	1125	18th April 1870	Alexander Morton Strathern. David Graeme Morrison.
Portable apparatus for manufacturing gas - (*without danger of explosion.*)	1144	19th April 1870	George Symes. James William Young.
Construction of multitubular steam boilers - - (*safety valves.*) (*Communicated by Georg Friedrich Udelhoven.*)	1207	26th April 1870	Alexander Browne.
Apparatus for saving life and property from fire, applicable also for lowering weights for other purposes.	1259	2nd May 1870	Edwin Robert Wethered.
Improvements in fire-escapes applicable to the windows of dwelling houses.	1377	13th May 1870	Thomas Bennett Gilbert.
Apparatus for raising, lowering and detaching ships' boats.	1421	17th May 1870	George Nelson.
Construction and arrangement of valves for regulating the supply or discharge of steam, water and other fluids.	1472	21st May 1870	Thomas Holt Lloyd.
Domestic fire escapes - - - -	1518	25th May 1870	Samuel Edward Tyrrell Steane.
Safety attachments for steam generators - - (*Communicated by Hiram Kimball.*)	1549	27th May 1870	Benjamin Joseph Barnard Mills.
Safety cages for mines and shafts - - -	1653	8th June 1870	Edward Clarke. John Hughes.
An improved coating for safety fuzes used in mining.	1735	17th June 1870	William Bickford Smith.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ACCIDENTS—*continued.*			
A new or improved self-acting indicator or machine for showing the times of trains to arrive at and depart from railway stations, points and crossings, for the better prevention of accidents, applicable also for other purposes. - -	1739	17th June 1870	William Ambler. Benjamin Jowett.
An internal spring coupling and brake for transmitting, stopping or regulating motion. -	1777	22nd June 1870	Léandre Mégy. Joseph de Echeverria. Felix Bazan.
Improvements in steam generators and in furnaces therefor. (*Communicated by S. Lloyd Wiegand.*)	1856	30th June 1870	William Robert Lake.
Manufacture of friction lights - - - - (*preventing accidents.*)	1865	1st July 1870	John Hynam. James Dixon.
Improvements in mine cages and in lifts for warehouses, hotels and for other places, and in apparatus connected with the said cages and lifts.	1882	8th July 1870	Charles Holcroft.
Lamps - - - - - - - (*Communicated by Franklin Thomas Grimes.*)	2061	21st July 1870	William Edward Newton.
Fire-arms - - - - - -	2205	9th Aug. 1870	Westley Richards.
Construction of miners' or safety lamps - -	2322	23rd Aug. 1870	James Allison Hogg.
Construction of railway chairs - - -	2390	2nd Sept. 1870	John Marshall. Harry Jones Harman.
Arrangements and mechanism for preventing or providing against accidents in winding or hoisting machinery used for mines and other purposes. - - - - - -	2447	10th Sept. 1870	William Barrow Turner. George Grey. Robert Brydon.
Life-boats - - - - - - (*Communicated by Robert Humble.*)	2498	16th Sept. 1870	William Robert Lake.
Improvements in lamps and in the construction of lenses and reflectors. - - - - (*miners' safety lamps.*)	2529	20th Sept. 1870	James Couper, the younger. William Haden Richardson.
Portable apparatus for manufacturing gas - (*safety valves.*)	2591	29th Sept. 1870	George Symes.
An improved valve apparatus applicable to vessels for containing petroleum and other volatile oils and spirits. (*Communicated by Messieurs Meissner, Ackermann and Company.*)	2596	30th Sept. 1870	George Henry Funck.
Apparatus for saving life and property at sea -	2685	11th Oct. 1870	Thomas George Tolson.
"Low-water alarms" for steam generators or water heaters.	2821	27th Oct. 1870	Robert Lees.
An improved buoyant mattress designed to serve either as a bed or life preserver. (*Communicated by Joshua Hunt.*)	2924	5th Nov. 1870	William Robert Lake.
Safety valves - - - - - -	2954	10th Nov. 1870	John Addy Hopkinson. Joseph Hopkinson, junior.
An improvement in constructing railway carriages and other road vehicles to insure further ease and safety in travelling.	2973	12th Nov. 1870	Joseph Chrimes.
Machinery or apparatus for preventing "overwinding" in mines, which invention is also applicable to hoists and for other similar purposes.	2997	16th Nov. 1870	James Landless.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ACCIDENTS— *continued.*			
Means or apparatus for preventing steam boiler explosions.	3043	21st Nov. 1870	Edward Langlet.
Miners' safety lamps - - - -	3106	26th Nov. 1870	Richard Brown.
Construction of ladders for general purposes, also applicable as a fire escape. - - -	3132	30th Nov. 1870	Charles Martin. George Owen Mew.
An improved apparatus for instantly detaching railway carriages from the engine while the train is in motion.	3164	2nd Dec. 1870	Joseph Robert McVoy.
Lamps - - - - - - -	3209	6th Dec. 1870	Patrick Adie. William Simpson.
Improved life preserving clothing - - (*Communicated by Clark Spencer Merriman.*)	3214	7th Dec. 1870	Alexander Melville Clark.
Apparatus for coupling and disconnecting railway carriages and trucks.	3311	19th Dec. 1870	Frederick Hawley.
Improvements in boats adapted for the relief of passengers and others from ships foundering at sea and for other uses.	3313	19th Dec. 1870	Benjamin Preston Harris.
ACIDS AND VINEGAR.			
Improved means of conveying and storing vitriol -	97	12th Jan. 1870	William Henry Balmain. William Jones Menzies.
Treatment of acid tars obtained from boghead, mineral schist or petroleum. (*Communicated by Gervais Chevrier.*)	153	18th Jan. 1870	John Henry Johnson.
Improvements in apparatus for evaporating and concentrating liquids and in recovering reagents from oil refiners and other bye-products. (*recovering sulphuric acid.*)	208	22nd Jan. 1870	Frederick Augustus Barrow.
An improved automatic apparatus for producing carbonic acid for the manufacture of effervescing or gaseous liquids and for the application of such liquids to various purposes. (*Communicated by Anet Jaques Nadaud.*)	305	2nd Feb. 1870	William Robert Lake.
Adapting iron vessels for receiving and conveying sulphuric and other acid liquids.	445	15th Feb. 1870	Edward Andrew Parnell.
Improvements in apparatus for evaporating, concentrating and distilling liquids, and in recovering reagents from oil refiners and other bye-products. (*recovering sulphuric acid.*)	793	17th March 1870	Frederick Augustus Barrow.
Preparation of ammoniated sulphuric acid for the manufacture of manure. (*Communicated by Charles U. Shepard, junior.*)	872	24th March 1870	William Robert Lake.
Improvements in obtaining and applying iron and manganese protoxides or their carbonates, in obtaining and applying baryta, strontia and salts thereof, in obtaining potash, soda and sulphur, and in utilising bye or "waste" products, arising in the manufactures of chlorine, copper and alum. (*obtaining sulphuric acid.*)	881	25th March 1870	Joseph Townsend.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ACIDS, &c.—*continued.*			
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation and preserving wood and other materials.	986	4th April 1870	Achille Thomas Anquetil.
Improvements in applying heat and in apparatus for applying heat in various chemical and other operations, such as roasting, oxidising, calcining, decomposing and volatilising. (*burning pyrites for manufacture of sulphuric acid.*)	1124	18th April 1870	Joseph Townsend.
Improvements in the decomposition of certain metallic sulphides and in the production of alkaline compounds, also of a compound of sulphur by such decomposition. (*sulphuric acid.*)	1176	22nd April 1870	William Gossage.
Improvements in the manufacture of artificial stone and in the manufacture of vessels for containing or conveying acids or acid vapours, or heated air or gases.	1233	29th April 1870	Frederick Ransome.
A process for the recovery, purification and revivification of sulphuric acid, spent and deteriorated in the refining of petroleum, coal and shale oils. (*Communicated by Michael Barrett, M.D.*)	1394	16th May 1870	George Willoughby Hemans.
Manufacture of sulphuric acid - - -	1447	19th May 1870	Robert Oxland.
Improvements in the manufacture of alum and in obtaining by-products in such manufactures, applicable to certain useful purposes. (*sulphuric and phosphoric acids.*)	1676	9th June 1870	Peter Spence.
A new or improved bleaching agent, also applicable for other purposes, together with the mode of and apparatus for producing the same. (*aqueous solution of sulphurous acid gas.*)	1770	21st June 1870	Daniel Collet.
Metallic jugs - - - - - - (*for acidulated liquids.*)	1851	29th June 1870	George Shadford Lee.
Improvements in evaporating and boiling or concentrating liquids, and in apparatus employed therein. (*acetic vinegar.*) (*Communicated by Jean Francois Cail.*)	1900	5th July 1870	John Henry Johnson.
Production of sulphuric and hydrochloric acids, of carbonates of potash and soda, and also of chlorine. (*Communicated by Hayda Mozart Baker.*)	2065	21st July 1870	John Henry Johnson.
Improvements in the preparation of worts, whereby an improved yield is obtained, with a residue suitable to be employed in the manufacture of paper, also in the employment of such residue, whether obtained in the preparation of worts or from other sources, in the manufacture of paper. (*worts for vinegar makers.*)	2231	11th Aug. 1870	Solomon Bennett.
Manufacture of sulphuric acid - - -	2283	18th Aug. 1870	Charles Wigg.
An improvement in the manufacture of sulphuric acid.	2293	19th Aug. 1870	Daniel Harrison Lowry.
Manufacture of manure - - - - (*recovering hydrochloric acid.*)	2425	7th Sept. 1870	Campbell Morfit.
Manufacture of sulphuric acid - - -	2641	5th Oct. 1870	Henry Deacon.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ACIDS, &c.—*continued.*			
Packages or receptacles for sulphuric acid - -	2715	14th Oct. 1870	Richard Holden Davis.
Improvements in the manufacture of sulphuric acid and in apparatus connected therewith.	2823	27th Oct. 1870	Peter Spence.
Manufacture of acids and alkaline salts - - (*Communicated by Haydn Mozart Baker.*)	2866	31st Oct. 1870	John Henry Johnson.
Smelting or reducing metals from their ores - (*recovering nitric acid.*)	2938	8th Nov. 1870	Isham Baggs.
Construction of apparatus for concentrating sulphuric acid.	2975	12th Nov. 1870	Auguste Ferdinand De Hemptinne.
Improvements in paper stock and means or method of making paper pulp from wood, straw, cane, esparto grass, flax, flax tow, hemp, hemp tow, jute, jute tow, Manilla rope or Manilla tow and all analogous material or vegetable substances, and in the treatment of materials used therein, and in apparatus for treating the same. (*production of pyroligneous acid.*) (*Communicated by Morris Longstreth Keen.*)	3392	29th Dec. 1870	Samuel Armstrong Walsh.
ADVERTISING.			
Improvements in the manufacture of tablets, facias, signs and similar articles, and in the means of producing names, numerals, inscriptions and devices for ornament, advertisement, illumination and other similar purposes. - -	223	25th Jan. 1870	Joseph Skertchly. Ambrose Maude Hurst.
An illuminated rotary advertising apparatus -	378	9th Feb. 1870	Joseph Haley.
Improvements in coal plates, whereby they are rendered more suitable for exhibiting advertisements. - - - - - - -	443	15th Feb. 1870	Henry Collins. Robert Thomas Hedges.
Methods of manufactures and combinations therewith of processes for producing pictorial, ornamental and other designs and devices. (*for advertising.*)	600	1st March 1870	Benjamin George George.
Manufacture of hackney carriage and other lamps, tablets and similar articles, for the purpose of exhibiting advertisements.	1057	11th April 1870	William Higgins.
A new or improved self-acting indicator or machine for shewing the times of trains to arrive at and depart from railway stations, points and crossings, for the better prevention of accidents, applicable also for other purposes. - - (*for advertising.*)	1739	17th June 1870	William Ambler. Benjamin Jowett.
Articles bearing or containing letters, characters, inscriptions or announcements, especially applicable for advertising purposes.	2025	18th July 1870	Charles Samuel.
Improved means of exhibiting in the open air advertisements, photographic views, portraits or pictures, and also for decorating the fronts of theatres and other buildings.	2202	8th Aug. 1870	Jean Marie Auguste Lacomme.
An improved mode of and apparatus for advertising and distributing business cards and circulars.	2659	7th Oct. 1870	William Elbert Dando.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ADVERTISING—*continued.*			
An improved method of producing divers coloured letters, figures or other characters upon a card, ticket, label, placards or other like article, or upon any suitable surface for advertizing or similar purposes.	2687	11th Oct. 1870	Charles John Letts.
An improved means of advertising - - (*Communicated by Henry Gustave Adrien Pécoul.*)	2908	3rd Nov. 1870	Alexander Melville Clark.
Advertising and apparatus connected therewith - (*distributing books, &c.*)	2944	8th Nov. 1870	Henry Cyrus Symons.
Means and apparatus for exhibiting advertisements	3022	18th Nov. 1870	Thomas Drummond.
An improved means of advertising, which improvement is also applicable in communicating information for other purposes.	3078	24th Nov. 1870	William Nunn.
AËRATING; AËRATED LIQUIDS; CARBURETTING AIR AND GAS.			
Machines for bottling soda-water and other gaseous or effervescing liquids. - - - - (*Partly communicated by Gustavus Davis Dows.*)	102	12th Jan. 1870	Adolphus Clark. Abraham Van Winkle.
Improvements in the construction of bottles intended to contain aërated and other liquids, and in the mode of stoppering the same and other similar vessels.	291	1st Feb. 1870	Charles William Fuller.
An improved automatic apparatus for producing carbonic acid for the manufacture of effervescing or gaseous liquids, and for the application of such liquids to various purposes. (*manufacture of seltzer water.*) (*Communicated by Anet Jacques Nadaud.*)	305	2nd Feb. 1870	William Robert Lake.
Bottles for containing aërated and similar liquids under pressure.	794	17th March 1870	John Walker.
Improved apparatus for filling glass bottles and jars with soups, jellies, fruits and other edibles, for the purpose of preserving them, the said apparatus being also applicable for filling bottles with sauces, wines, spirits, beers, liqueurs and other still and effervescing beverages, also machinery in combination with the above apparatus for corking or stoppering such said bottles and jars.	989	5th April 1870	James Winter, the younger.
An improved stopper for bottles, and bottle for containing gases or gases combined with liquids, such as aërated beverages, whereby an improved mode of stoppering such bottles can be effected.	1639	7th June 1870	Lauchlan Rose.
Apparatus for manufacturing iced sirup or cream, and soda-water beverages.	1650	8th June 1870	Antoine Piccaluga.
Improvements in evaporating and boiling or concentrating liquids and in apparatus employed therein. (*mineral waters.*) (*Communicated by Jean Francois Cail.*)	1900	5th July 1870	John Henry Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AËRATING, &c.—*continued.*			
Process of and apparatus for carburetting gases or atmospheric air so as to render the same applicable for lighting, heating or producing motive-power. (*Communicated by Emile Charles Maillet.*)	1967	12th July 1870	Bristow Hunt.
Manufacturing carbonate of soda - - - (*obtaining carbonic acid gas.*) (*Communicated by Emil Bergmann.*)	2111	27th July 1870	Patrick Cockburn Don.
Improved apparatus for facilitating the withdrawal of liquids from flasks, bottles, jars and other vessels. (*effervescing drinks.*)	2280	18th Aug. 1870	Henry William Dee.
Manufacture of aërated beverages - - -	2362	29th Aug. 1870	Robert Mackay.
Improvements in apparatus for economizing the waste heat and gases from furnaces and in means for generating, collecting and purifying gases, such gases being applicable to various useful purposes. (*carbonic and nitrogenous gases.*)	2377	31st Aug. 1870	Thomas Atkins.
Improved apparatus for filling glass bottles and jars with soups, jellies, fruits and other edibles for the purpose of preserving them, the said apparatus being also applicable for filling bottles with sauces, wines and spirits, beer, liqueurs and other still and effervescing beverages, also machinery in combination with the above apparatus for corking or stoppering such said bottles and jars.	2635	4th Oct. 1870	James Winter, the younger.
Apparatus for securing corks and stoppers in bottles.	2701	13th Oct. 1870	Joseph Baker Philips.
An improved metallic composition for roofing, linings, pipes and other purposes. (*for holding mineral waters.*) (*Communicated by David Johnson Millard.*)	2935	7th Nov. 1870	William Edward Newton.
Apparatus for obtaining, condensing, utilizing and applying mineral and other waters.	3202	6th Dec. 1870	Thomas Dunn.
AËRIAL MACHINES, AËROSTATION, BALLOONS.			
Machinery for propelling vessels and aërial machines by reaction, parts of which are applicable to forcing fluids for other purposes.	623	3rd March 1870	Richard Boyman Boyman.
Means and apparatus for effecting aërial locomotion	1469	21st May 1870	Richard Harte.
A new propulsion engine to be used for propelling bodies through the water and through the air and for breaks to railway locomotives and other engines.	2040	20th July 1870	William Murray Ross.
Construction of navigable balloons - -	3272	14th Dec. 1870	Philip Brannon.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Air, Gas and Wind Engines and Mills; Pneumatic Motive-Power.			
Improvements in apparatus for and in the treatment of liquid fuel and in the application thereof to prime movers.	194	22nd Jan. 1870	Johann Maximilian Plessner.
An improved windmill which when divested of a portion of its regulating parts can also be used as a water-wheel or as a ship's propeller.	281	31st Jan. 1870	Charles Mahler.
An improved machinery for generating, obtaining and applying motive-power.	440	15th Feb. 1870	Abel Hureau de Villeneuve.
An improved pneumatic engine - - - (*Communicated by John S. Morton.*)	511	21st Feb. 1870	William Robert Lake.
Windmills - - - - - (*Communicated by Edward Savoral.*)	551	24th Feb. 1870	William Edward Newton.
A new or improved rotary engine - - -	584	28th Feb. 1870	Abraham Ripley.
An improved apparatus for producing rotary motion	615	2nd March 1870	Charles Ernest de Lorière.
Means for producing motive-power - - - (*and packing.*)	1086	13th April 1870	Robert Mudge Marchant.
Combined high and low pressure steam and atmospheric engines. - - -	1251	2nd May 1870	Thomas Paton. Thomas Winder.
Construction of and methods of working gas engines (*Communicated by Lars Albert Leonard Söderström and George Alexander Dick.*)	1352	11th May 1870	Edward Primerose Howard Vaughan.
Improvements in meters for measuring fluids and in packings and counting apparatus to be used therewith, parts of which improvements are applicable to engines for obtaining motive-power from fluids under pressure and to other purposes.	1363	13th May 1870	Henry Law.
Steam and other valves - - -	1477	21st May 1870	Henry Hind. George Wells.
Improvements in motive-power and in machinery, apparatus or appliances to be used in connection therewith. (*from carburetted hydrogen gas.*)	1537	27th May 1870	William Astrop.
Construction and arrangement of stages made of iron or other similar material applicable to windmills or other buildings, or erections or structures.	1812	25th June 1870	Esau Lambert.
Obtaining motive-power - - -	1897	5th July 1870	John Heaton.
An improved hot-air engine - - -	1945	9th July 1870	Thomas Tertius Chellingworth.
Process of and apparatus for carburetting gases or atmospheric air so as to render the same applicable for lighting, heating or producing motive-power. (*Communicated by Emile Charles Maillet.*)	1967	12th July 1870	Bristow Hunt.
An improved wind engine or apparatus for obtaining and applying motive-power. - -	2033	19th July 1870	Charles Horton Plowright. William Plowright.
A new or improved application of atmospheric power to fixed locomotive and ascensional machines. (*Communicated by Alfred Francois Osselin.*)	2135	30th July 1870	William Edward Gedge.
Apparatus for compressing air and raising and forcing fluids. (*obtaining motive-power.*)	2224	10th Aug. 1870	Nicholas Demetrius Spartali.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AIR ENGINES, &c.—*continued.*			
Steam and gas engines - - - - -	2383	1st Sept. 1870	Isham Baggs.
Steam, gas and air engines - - -	2437	9th Sept. 1870	George Henry Ellis.
Improvements in steam, air and gas, and in fluid or hydraulic engines.	2554	23rd Sept. 1870	William Firth.
A new mode or apparatus for obtaining and applying motive-power. (*from compressed heated gas.*)	2884	2nd Nov. 1870	Otto Trossin.
Apparatus for cooling and refrigerating liquids, manufacturing ice and obtaining ammoniacal solution for the same, and other purposes. (*obtaining power from ammoniacal gas.*)	2891	2nd Nov. 1870	Rees Reece.
Improvements in the construction of and in the methods of working gas engines. (*Communicated by Lars Albert Leonard Söderström and George Alexander Dick.*)	2959	10th Nov. 1870	Edward Primerose Howard Vaughan.
See also "GOVERNORS."			
AIR SUPPLYING, BLOWING, EXHAUSTING; DRAFT AND VENTILATION.			
I.—Supplying Air to Furnaces, Stoves, Lamps, &c.; Increasing and Regulating Draft; Tuyeres; Dampers; Chimney Wind Guards; Heating Blast.			
Apparatus for puddling iron, applicable also as tuyeres for metallurgical furnaces generally. (*Communicated by Auguste Ponsard.*)	81	11th Jan. 1870	John Henry Johnson.
Steam boiler and other furnaces - - -	117	13th Jan. 1870	William Thornley. Samuel Spencer. Joseph Wright.
Improvements in the construction of steam and other boilers and in apparatus used therewith for economising heat, condensing steam and saturating heated air.	124	15th Jan. 1870	James Wadsworth.
Improved apparatus for preventing the downward draught in chimnies.	125	15th Jan. 1870	Murray Anderson.
Apparatus for the prevention of smoke in steam boiler and other furnaces.	136	17th Jan. 1870	Thomas Taylor.
An improvement in or addition to ordinary fire-grates.	156	19th Jan. 1870	William Frederick Padwick.
Improvements in apparatus used in the manufacture of gas, part of which apparatus is also applicable for ventilating mines for promoting combustion and for pumping, measuring and forcing fluids. (*Blowing air into furnaces.*)	259	28th Jan. 1870	Edmund Small Cathels. David Terrace.
Motive-power engines and steam generators to be used therewith, suitable for domestic purposes. (*driving blowers.*) (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Air Supplying, &c.—*continued.*			
Improvements in fire-places for generating steam and in other furnaces where great heat is required.	387	9th Feb. 1870	John Martin Stanley. William Atkins.
Ventilation of chimneys and apartments	393	10th Feb. 1870	James Thomson. William Thomson.
Glass and other furnaces	460	16th Feb. 1870	John Dawson. Nathaniel Grace Lambert.
Construction of furnaces to effect consumption of smoke and saving of fuel.	490	19th Feb. 1870	George Jones.
Cooking ranges (*air flues.*)	514	22nd Feb. 1870	Hugh Ferguson.
Improvements in treating iron ores and in processes and apparatuses for the production of cast steel where such ores are employed.	594	28th Feb. 1870	Charles William Siemens.
Improved apparatus for generating steam or elastic vapours for actuating motive-power engines. (*Communicated by Jean Baptiste Givord.*)	691	8th March 1870	William Edward Newton.
Improvements in or applicable to steam boiler and other furnaces for promoting the consumption of smoke.	704	10th March 1870	Robert Blakeborough. Solomon Sanderson.
Automatic apparatus for operating the dampers of steam boilers and of other furnaces.	719	11th March 1870	Francis Brusch.
Stoves for drying bricks and other articles in pottery.	735	12th March 1870	James Dunnachie.
Means or apparatus for regulating the flow of air into steam-boiler and other furnaces.	743	14th March 1870	John Glover.
Ventilating lights (*supplying air to the burners.*)	818	19th March 1870	John Hockey.
Fire-grates	840	22nd March 1870	John Milne.
Improvements in steam-boiler and other furnaces, applicable in part to fire-grates and stoves of various kinds.	865	24th March 1870	Joseph Sawyer. John Brindley.
Means of and apparatus for consuming smoke	910	29th March 1870	Richard Guest Rainforth.
Improvements applicable to fire-places, stoves and grates for ensuring safety against fire and the prevention of smoky chimneys. (*rolling curtain or blower.*)	1067	12th April 1870	Lewis William Thomas.
Construction of retorts, muffles, pots and furnaces for reducing zinc and other ores. (*making air channels.*)	1113	16th April 1870	Alfred Borgnet.
Manufacture of coke and the apparatus connected therewith.	1149	20th April 1870	Jonathan Green.
Fire-bars (*making hollow for admission of air*).	1156	20th April 1870	William Batchelor.
Heating stoves or furnaces	1163	21st April 1870	Maurice Chapman Hull.
Boilers, air heaters, steam condensers and analogous constructions for transferring heat from one fluid to another. (*increasing draft.*)	1191	25th April 1870	Samuel Dyer Tillman.
Ships' and other signal lamps	1253	2nd May 1870	William Nunn.
Furnaces and boilers	1290	5th May 1870	Thomas Ellis.

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Ships' and other signal lamps	1253	2nd May 1870	William Nunn.
Furnaces and boilers	1290	5th May 1870	Thomas Ellis.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AIR SUPPLYING, &c.—*continued.*			
Apparatus or arrangements for preventing or reducing the production of smoke in furnaces.	1299	6th May 1870	David Walker.
Apparatus or machinery for making gas from liquid hydro-carbons for illuminating purposes. (*mixing air with gasoline vapour.*) (*Communicated by Myron Hopkins Strong, Thomas Barbour and Charles Cunningham Connor.*)	1335	10th May 1870	William Robert Lake.
New perforated fire bars applicable to locomotive and steam boilers.	1337	11th May 1870	Frederick Broughton.
Improved means or apparatus for admitting and regulating the supply of air to steam-boiler and other furnaces. - - - -	1446	19th May 1870	John Addy Hopkinson. Joseph Hopkinson, jun.
Mode of supplying lamps or lanterns with atmospheric air for supporting their illuminating flames. (*Communicated by John Henry Irwin.*)	1485	23rd May 1870	Martin Benson.
Construction of gas stoves - - -	1514	25th May 1870	George Thomas.
Steam-boilers - - - - (*dampers.*)	1533	26th May 1870	William Arnold. William Carnelley.
Grate bars and other parts of steam-boiler and other furnaces.	1636	6th June 1870	Thomas Lishman.
Steam-boiler and other furnaces, fire-bars and flues	1651	8th June 1870	George Lodge. George Sheard.
Improvements in producing light from heavy hydrocarbons and in apparatus for that purpose. (*Communicated by Rufus Spaulding Merrill.*)	1660	8th June 1870	John Henry Johnson.
Improved bellows for lighting fires - -	1717	15th June 1870	Joachim Fossard.
Construction of furnaces for the manufacture of iron and steel.	1723	16th June 1870	Josiah Swain.
Improvements in smelting iron and other ores and in the apparatus employed therefor. (*heating the blast.*)	1790	23rd June 1870	Andrew Barclay.
Construction and regulation of boilers for heating buildings.	1889	4th July 1870	Ambrose Marriott.
Furnaces chiefly designed for heating metals and ores. (*Communicated by William A. Sweet.*)	1914	6th July 1870	William Robert Lake.
An improved hot-air engine - - - (*construction of air-pump.*)	1945	9th July 1870	Thomas Tertius Chellingworth.
Apparatus for pumping and forcing air and other fluids, and which apparatus is peculiarly applicable to desiccating, the ventilation of mines, buildings, ships and other structures, and for blast and other purposes.	1976	13th July 1870	William Cowley.
Manufacture and melting of iron and steel -	2028	19th July 1870	John Frederick Parker. Edwin Sunderland.
Improvements in the manufacture of iron and steel and in furnaces to be used in such manufacture, partly applicable to the smelting of lead and copper ores.	2036	19th July 1870	Joseph Henderson.
Ovens - - - - - (*Communicated by Hosea Ball.*)	2052	20th July 1870	Benjamin Joseph Barnard Mills.
Lamps - - - - - (*Communicated by Franklin Thomas Grimes.*)	2061	21st July 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AIR SUPPLYING, &c.—*continued.*			
Improved means and apparatus for regulating the admission of air to steam boiler and other furnaces.	2099	26th July 1870	Charles Gall.
Manufacture of iron and its alloys - -	2130	29th July 1870	Jacob Geoghegan Willans.
Apparatus for preventing smoky chimnies and for ventilation generally.	2179	4th Aug. 1870	John Sycamore.
Apparatus for compressing air and raising and forcing fluids. (*creating blast for furnaces.*)	2224	10th Aug. 1870	Nicholas Demetrius Spartali.
Apparatus for regulating the supply of air to furnaces	2227	11th Aug. 1870	Thomas Symes Prideaux.
Apparatus for lighting and heating purposes -	2331	24th Aug. 1870	Albert Marcius Silber.
Improvements in apparatus for economizing the waste heat and gases from furnaces and in means for generating, collecting and purifying gases, such gases being applicable to various useful purposes.	2377	31st Aug. 1870	Thomas Atkins.
An improved apparatus for lighting with legroine gas (petroleum spirit).	2451	10th Sept. 1870	Arcadi Stolipine.
Improvements in or additions to stoves or fireplaces.	2473	14th Sept. 1870	John Large.
Candles - - - - - - -	2513	19th Sept. 1870	John Kingsford Field.
An improved iron for ironing, to be used for laundry, domestic, manufacturing and general purposes.	2530	21st Sept. 1870	John Raywood.
Blast furnaces - - - - - -	2551	23rd Sept. 1870	Andrew Barclay.
Steam-boiler and other furnaces and stoves -	2557	23rd Sept. 1870	John Tatem Rich.
Means of and apparatus for consuming smoke -	2589	29th Sept. 1870	Richard Guest Rainforth.
Furnaces suitable for melting and heating metals and for other purposes.	2600	30th Sept. 1870	Thomas Russell Crampton.
An improved oven for baking biscuits, bread and other aliments.	2607	30th Sept. 1870	Edward Wylam.
Furnaces for steam-boilers and other purposes -	2629	3rd Oct. 1870	Ellis Butterworth.
Apparatus for ventilating stoke holes and engine rooms of steam ships. (*and ensuring draft to the furnace.*)	2643	5th Oct. 1870	William Rudd Oswald. George Hough.
Construction of cupola furnaces - - -	2686	11th Oct. 1870	Peter Newland.
Construction of furnaces for burning coals or other combustibles.	2717	14th Oct. 1870	John Jordan.
Production of motive-power and appliances connected therewith. - - - - - - (*increasing blast of furnace.*)	2729	17th Oct. 1870	George Bell Galloway. George Thomas Galloway.
Gas stoves for heating and warming rooms and for other like purposes.	2730	17th Oct. 1870	John Stalvies.
Means or apparatus for producing the more complete combustion of gas, paraffin and other hydrocarbon oils. (*Communicated by Henry Harrison Doty.*)	2865	31st Oct. 1870	Alexander Horace Brandon.
Improved methods of and apparatus for utilising the waste and spare or live steam, waste and spare heat and waste and spare momentum of locomotive and other steam engines.	2906	3rd Nov. 1870	Thomas Arthur Dillon.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AIR SUPPLYING, &c.—*continued.*			
Construction and working of furnaces, baker's oven, fire-places, stoves and stove grates, for the purpose of igniting and consuming smoke.	2922	5th Nov. 1870	William Henry Tooth.
Lamps especially applicable to railway lamps -	2963	10th Nov. 1870	Albert Marcius Silber. Frederick White.
Lamps for the roofs of railway carriages and other purposes. (*air induction pipes.*)	2982	14th Nov. 1870	William Thomas Tongue.
Furnaces - - - - - - -	3008	17th Nov. 1870	Hugh Wallace.
Furnaces - - - - - -	3021	18th Nov. 1870	Julius Frölich.
Hydrocarbon lighting apparatus, chiefly designed for locomotives and signals. (*Communicated by Myron Hopkins Strong, Thomas Barbour, Charles Cunningham Connor, and Robert Barbour.*)	3061	23rd Nov. 1870	William Robert Lake.
Gas regulating apparatus - - - - - (*Communicated by Myron Hopkins Strong, Thomas Barbour, Charles Cunningham Connor, and Robert Barbour.*)	3062	23rd Nov. 1870	William Robert Lake.
Improvements in the manufacture of iron and steel and castings of the same, and in apparatus employed therefor. (*Communicated by John Ware Middleton.*)	3087	24th Nov. 1870	George Haseltine.
Improvements in the manufacture of iron and steel and in furnaces and apparatus to be used in the said manufacture, parts of which improvements may also be applied to other purposes. (*heating blast.*)	3099	25th Nov. 1870	Thomas Callender Hinde.
Construction of furnaces for preventing or lessening smoke and effecting more perfect combustion of the fuel employed therein. - - - -	3135	30th Nov. 1870	Thomas Hydes. John Emil Bennett.
Furnaces and apparatus to be used in the manufacture of glass. - - - - -	3166	2nd Dec. 1870	Samuel Bishop. Charles Bishop.
Blast furnaces - - - - - -	3187	3rd Dec. 1870	James Hunter.
Improvements in the means for exhausting or charging receivers, principally applicable for working pneumatic tubes, for raising fluids and for exhausting steam in steam-engines, including particular arrangements of apparatus for carrying out these several objects. (*urging draft of chimneys.*)	3255	12th Dec. 1870	Charles William Siemens.
Puddling, heating and other furnaces - -	3282	15th Dec. 1870	Dougald McCorkindale.
Improvements in lamps, especially applicable to railway and street lamps. - - - -	3318	19th Dec. 1870	Albert Marcius Silber. Frederick White.
Apparatus for lighting and heating purposes -	3325	20th Dec. 1870	Albert Marcius Silber.
Furnaces - - - - - - -	3328	20th Dec. 1870	Jacob Geoghegan Willans.
Means of and apparatus for preventing or curing smokey chimneys.	3330	21st Dec. 1870	William Peck Taylor.
Improved furnaces for melting and puddling iron or steel and for heating iron, steel and other metals. (*heating and supplying heated air.*)	3337	21st Dec. 1870	Andrew Howatson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AIR SUPPLYING, &c.—*continued.*			
Improvements in furnace doors and in apparatus connected therewith. (*regulating supply of air.*)	3383	28th Dec. 1870	David Auld, the younger.
Improvements in steam generators and in furnaces therefor. (*dividing draft in numerous flues.*) (*Communicated by S. Lloyd Wiegand.*)	3390	29th Dec. 1870	William Robert Lake.
II.—Supplying Air in Cleansing, Thrashing and Dressing Grain and Seeds.			
Improvements in treating grain and in the mechanism employed therefor.	683	8th March 1870	John Polson.
Mills for crushing and grinding - - - (*Partly communicated by Charles Ross and John Ross.*)	967	2nd April 1870	Henry Jackson.
Machinery for treating cotton seeds - -	1121	18th April 1870	William Henry Delamare.
Machinery for hulling cotton seeds and separating their kernals from the hulls and fibres. (*use of air currents.*)	1175	22nd April 1870	Henry Shaw.
Thrashing machines - - - - -	1619	4th June 1870	Henry Brinsmead. Richard Lyons.
Improvements in machinery and arrangements for cleaning and reducing wheat, maize, beans, peas and other seeds into flour or semolina, part of which improvements are applicable to machinery for pulverizing or reducing other substances.	1895	5th July 1870	Thomas Carr.
An improved manufacture of wheat flour - -	2149	2nd Aug. 1870	Thomas Carr.
A portable apparatus for turning, airing and screening wheat and other grain, which machine is particularly applicable for the removal of dust and weevils.	2958	10th Nov. 1870	William Henry Gittins.
Improvements in separating seeds and ground or pulverized substances, and in the apparatus or means employed therefor.	3258	13th Dec. 1870	William Walker Gibson.
III.—Admitting, Forcing and Exhausting Air for Manufacturing and other Purposes; Air-pumps, Bellows, Fans and other Blowers; Forcing Gas through melted Metal, &c.			
An improved gas stove, part of which is also applicable to blow pipes and forges.	15	3rd Jan. 1870	Thomas Charles Olney.
Regenerative hot-blast stoves for heating air, steam and other gases. - - - - (*employing jets of air for clearing out deposit.*)	34	5th Jan. 1870	Charles William Siemens. Edward Alfred Cowper. Charles Cochrane.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Air Supplying, &c.—*continued.*			
Treatment of cast iron for the production of castings therefrom. (*Communicated by Nicholas John Poutiloff.*)	72	10th Jan. 1870	Charles Denton Abel.
Apparatus for puddling iron, applicable also as tuyeres for metallurgical furnaces generally. (*driving reagents through cast iron by jet of air.*) (*Communicated by Auguste Ponsard.*)	81	11th Jan. 1870	John Henry Johnson.
Machinery for preparing fibres for spinning - (*applying blast.*) (*Communicated by André Koechlin.*)	106	12th Jan. 1870	Alfred Vincent Newton.
Improvements in discharging grain from ships and elsewhere and in the apparatus or means employed therefor. (*by currents of compressed air.*)	185	21st Jan. 1870	Matthew Anderson.
Improvements in apparatus for and in the treatment of liquid fuel and in the application thereof to prime movers.	194	22nd Jan. 1870	Johann Maximilian Plessner.
Feed apparatus for printing machines - - (*employment of vacuum.*)	350	7th Feb. 1870	Samuel Bremner.
Organs - - - - - -	369	8th Feb. 1870	John Pinney.
Improvements in machinery or apparatus for washing or scouring and drying wool and other fibrous materials and yarns or threads.	386	9th Feb. 1870	John Petrie, junior.
Machinery for shearing and washing sheep or other animals.	394	10th Feb. 1870	John Charles Wilson.
Improvements in utilising water pressure in raising liquids and in apparatus therefor, also in pressure-reducing valves for the said apparatus and applicable otherwise. - - - - (*compressing air.*)	398	10th Feb. 1870	William McGeorge Mason. Thomas Lockerbie.
Apparatus for drying sugar - - - (*Communicated by Alexander Herbst.*)	415	11th Feb. 1870	William Robert Lake.
Improved machinery for bolting or sifting flour or meal and separating the heavier from the lighter particles. (*Communicated by Louis Theodore Hippolyte Loron.*)	416	11th Feb. 1870	William Edward Newton.
Utilization of the dried or "hard" waste made in the process of wet flax spinning. - -	420	12th Feb. 1870	Jonas Brown.
Apparatus or machinery to be employed for facing, grooving or otherwise preparing blocks of stone, portions thereof being also applicable for other purposes.	429	14th Feb. 1870	Thomas Taylor Lingard.
Manufacture of the carbonates of ammonia - (*blowing carbonic acid gas through the sulphate or phosphate of ammonia.*)	485	18th Feb. 1870	Isham Baggs.
An improved pneumatic engine - - - (*forming a vacuum.*) (*Communicated by John S. Morton.*)	511	21st Feb. 1870	William Robert Lake.
Machinery or apparatus for drying woven fabrics and yarns or threads, and for "ageing" woven fabrics.	527	23rd Feb. 1870	James Farmer.
Machinery for excavating coal, stone and other minerals, and for compressing air. - -	571	26th Feb. 1870	Samuel Firth. Frederick Hurd.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AIR-SUPPLYING, &c.—*continued.*			
An improved apparatus for subcutaneous extractions and injections. (*transforming into a pneumatic machine or air pump.*) (*Communicated by Georges Dieulafoy.*)	640	4th March 1870	William Edward Gedge.
Improved means of ventilating and reducing the temperature of rooms or apartments in vessels, buildings and other structures.	655	5th March 1870	George Elliot.
Construction of cisterns and tanks - - (*supplying pure air.*)	666	7th March 1870	George Gregory Lowe.
An improved machine for sweeping carpets and other floor coverings and floors by the action of an atmospheric current. (*Communicated by Arthur John Hapgood.*)	676	7th March 1870	William Robert Lake.
An improved apparatus for use in drawing and forcing air, water and other fluids.	706	10th March 1870	Charles Aston Winder.
Atmospheric stamps and hammers, partly applicable to other purposes.	749	15th March 1870	William Husband.
Improved machinery or apparatus and processes for the manufacture of paper and other pulp from wood and other fibrous materials. (*applying vacuum to revolving kiers.*)	750	15th March 1870	John Felber.
A new or improved apparatus for damping woven fabrics. (*Communicated by Emile Welter.*)	792	17th March 1870	William Edward Gedge.
Machinery or apparatus for cutting or dressing stone. (*adaptation of air cylinders to the hammers.*)	803	18th March 1870	Robert Girdwood.
Improvements in apparatus for getting or cutting minerals and in apparatus for compressing air.	815	19th March 1870	Alexander Morton Strathern.
Smelting copper and other metals - - (*injecting air into melted metal.*)	874	25th March 1870	Thomas Gibb. Charles Gelstharp.
Apparatus for facilitating the sorting of wool -	886	25th March 1870	William Ramsden. John Charles Pearce. Robert Ayrey.
Preservation of animal and vegetable substances to be used as food. (*removing air from the cases.*)	1009	6th April 1870	Richard Jones.
Machinery for cleaning, preparing and spinning cotton and other fibrous substances. (*blowers.*)	1078	13th April 1870	Edward Lord.
Means for producing motive-power - - (*constructing pumps for compressing.*)	1086	13th April 1870	Robert Mudge Marchant.
An improved apparatus combining the functions of a bung and of a self-acting vent peg. (*atmospheric pressure bung.*)	1160	21st April 1870	Romain François Bigot.
Improvements in kilns or ovens and in apparatus employed therewith, chiefly designed for drying and burning bricks, tiles and ceramic ware. (*producing artificial currents of air.*)	1190	23rd April 1870	Augustus Morand.
Machinery or apparatus for separating and sorting cotton or other fibrous substances. - - (*by a current of air.*)	1195	25th April 1870	John Lord. Jonathan Gresty. Christopher Cross.
Apparatus for lifting, forcing or conducting liquids, gases or air. - - - - - -	1262	3rd May 1870	James Anthony Emslie. James Thomas Emslie.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AIR-SUPPLYING, &c.—*continued.*			
Improved means of communicating between the passengers, guard and engine driver upon railways.	1264	3rd May 1870	Thomas Bradbury. Joseph Bamford.
Steam pumping or blowing engines (*Communicated by James Riley Maxwell and Esra Cope.*)	1413	17th May 1870	Martin Benson.
Apparatus for the production of gases for lighting and heating purposes. (*Communicated by Xavier Moussard.*)	1456	19th May 1870	Alexander Melville Clark.
Improvements in parlour foot-balls and other india-rubber articles, which improvements relate partly to illustrating the surfaces of such articles and partly to inflating the same.	1505	24th May 1870	Thomas Jefferson Mayall.
Improvements in blast and other furnaces, and in extracting metals from their ores and from metallurgical products in separating and refining such metals, and in the means and apparatus employed for such purposes. (*forcing gases through metal.*)	1527	26th May 1870	Julian Bernard.
Certain improvements in machinery or apparatus used in sizing and dressing yarn. (*forcing compressed air against the yarn.*)	1575	30th May 1870	Colin Mather.
Improvements in printing and in the machinery or apparatus employed therefor. (*using blasts of air in laying printed sheets.*)	1581	31st May 1870	Percy David Hedderwick.
An improved ink or mucilage stand (*with vacuum above the ink.*) (*Communicated by Doctor Franklin Thomas Grimes.*)	1585	31st May 1870	William Edward Newton.
Improvements in desiccating sugar-cane refuse (known as megass bagassa or trash) and in the apparatus or means employed therefor.	1628	4th June 1870	James Buchanan Mirrless. William Renny Watson.
Improvements in apparatus for the supply of water to watercloseets, urinals, lavatories, buildings and streets, some of which improvements are applicable to other purposes. (*use of air vessels.*)	1713	15th June 1870	Henry Law.
Improved bellows for lighting fires	1717	15th June 1870	Joachim Fossard.
Rotary engines (*for pumping air.*)	1761	21st June 1870	James Outram.
Machinery for forcing or exhausting air or aeriform fluids.	1792	23rd June 1870	Edward Finch.
Improvements in telegraphy and in apparatus to be used therefor.	1855	30th June 1870	Augusto Guattari.
Pumping or forcing apparatus for hydraulic presses and for compressing or exhausting elastic fluids.	1947	9th July 1870	Thomas Bruce.
Improvements in drying malt, grain and other substances, and in the apparatus therefor. (*Communicated by Attilio R. Petraccki, Helen Merrill, Robert Heneage and Henry Spendlow.*)	1969	12th July 1870	Nicholas Constantine Maximos.
Apparatus for pumping and forcing air and other fluids, and which apparatus is peculiarly applicable to desiccating the ventilation of mines, buildings, ships and other structures, and for blast and other purposes.	1976	13th July 1870	William Cowley.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AIR SUPPLYING, &c.—*continued.*			
Improvements in pneumatic stamps and hammers, also applicable to machinery for driving piles, cutting, splitting or dressing stone and for boring rocks.	2011	16th July 1870	William Husband.
Manufacture and melting of iron and steel -	2028	19th July 1870	John Frederick Parker. Edwin Sunderland.
A new propulsion engine to be used for propelling bodies through the water and through the air, and for breaks to railway locomotives and other engines. (*vacuum cylinders*).	2040	20th July 1870	William Murray Ross.
Improved means for drying substances impregnated with moisture.	2045	20th July 1870	Thomas Meredith Hopkins.
Improvements in treating sewage and in manufacturing manure.	2048	20th July 1870	Charles Bartholomew.
Drying apparatus for drying agricultural, animal and chemical and commercial products.	2145	1st Aug. 1870	William Alfred Gibbs.
Cutting, boring, grinding and pulvering stone and other hard substances. (*Communicated by Benjamin Chew Tilghman.*)	2147	1st Aug. 1870	Alfred Vincent Newton.
Improved machinery for feeding sheets of paper to printing presses and other machines requiring to be similarly fed. (*Communicated by John Thomas Ashley.*)	2156	2nd Aug. 1870	Alfred Vincent Newton.
An improved steam generator - - - (*using a vacuum chamber.*) (*Communicated by Nelson Horatio Barbour.*)	2211	9th Aug. 1870	William Armand Gilbee.
Apparatus for compressing air and raising and forcing fluids.	2224	10th Aug. 1870	Nicholas Demetrius Spartali.
Means and apparatus for working brakes for the rolling stock of railways and tramways, as also for working feed-water pumps in connection therewith. (*application of air; air pump.*) (*Communicated by George Westinghouse, junior.*)	2235	11th Aug. 1870	Charles Denton Abel.
Machinery for compressing air - - - (*Communicated by Charles Burleigh.*)	2258	13th Aug. 1870	Thomas Brown.
Improvements in treating and purifying animal and vegetable fats and oils and in apparatus connected therewith.	2281	18th Aug. 1870	James John Shedlock.
Manufacture of sulphuric acid - - -	2283	18th Aug. 1870	Charles Wigg.
Improvements in motive-power engines, which improvements are also in part applicable as brakes and dynamometers. (*blowers.*)	2285	18th Aug. 1870	Thomas Ivory.
An improvement in the manufacture of sulphuric acid.	2293	19th Aug. 1870	Daniel Harrison Lowry.
An improved process of purification of cast iron from sulphur and phosphorus in the manufacture of steel. (*forcing gas through melted metal.*)	2325	24th Aug. 1870	Facundo Joaquin Ramon Carulla.
Improvements in apparatus for producing inflammable gas from mineral and other oils, parts of which are applicable for heating purposes. -	2354	27th Aug. 1870	Thomas Clayton. William Henry Bailey.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AIR SUPPLYING, &c.—*continued.*			
An improved process for forming vacuum in freezing apparatus. (*Communicated by Charles Parker.*)	2363	29th Aug. 1870	Edward Thomas Hughes.
Improvements in propellers, pumps and blowers -	2416	6th Sept. 1870	William Walker.
Chimney tops and ventilators - - - (*increasing air for hop drying.*)	2422	6th Sept. 1870	Thomas Murray Gladstone.
Continuous distilling apparatus for distilling petroleum and other kinds of oils. (*using a vacuum.*) (*Communicated by Henry Francis Howell.*)	2458	12th Sept. 1870	Thomas Harvey.
Improvements applicable to letter-press printing machines and in the production of stereotypes to be used therewith.	2514	19th Sept. 1870	Edmund Squire Norcombe.
Apparatus for raising and drawing off liquids -	2522	20th Sept. 1870	Adolphus Frankenberg.
Machinery and arrangement for separating mixed substances or materials of different specific gravities.	2594	30th Sept. 1870	Henry Clifton Carver.
Signals and signalling - - - (*Communicated by James Gordon.*)	2602	30th Sept. 1870	Thomas Foulkes.
Combined lifting and force pumps - - - (*Communicated by Isaac H. Gustin.*)	2633	4th Oct. 1870	George Haseltine.
Means or apparatus for raising and measuring beer and other liquids.	2651	6th Oct. 1870	Cuthbert Burnett.
Improvements in bearings, packings for shafts, spindles, rods and other like pieces of machinery, and in materials employed in the manufacture of such bearings and packings. (*Communicated by Eliza Dexter Murfey.*)	2663	7th Oct. 1870	John Henry Johnson.
Steam engines - - - - (*air pump.*) (*Communicated by John Houpt.*)	2678	10th Oct. 1870	William Robert Lake.
Improved arrangements for applying compressed air or other fluid to propel omnibuses or other vehicles on railways, tramways or common roads, and in part applicable otherwise. - - (*compressing air.*)	2733	17th Oct. 1870	David Laidlaw. John Thomson.
Machinery and apparatus for breaking nuts and separating the husks and shells from the kernels. (*using currents of hot air for drying.*)	2741	18th Oct. 1870	William Mather.
Improvements in applying heat to steam boilers, and in apparatus therefor.	2748	19th Oct. 1870	Brierley Denham Healey.
Machinery or apparatus for washing, opening, and drying wool and other fibrous materials, and washing yarns. - - - - - (*exhausting fan.*)	2772	21st Oct. 1870	John McNaught. William McNaught, junior.
Outlet or jet pipes of fire-engines, high-pressure mains and other apparatus. (*Communicated by Jan Anthony Muller.*)	2820	27th Oct. 1870	Edward Thomas Hughes.
Preparation and use of peat or turf, and bituminous, resinous and ligneous substances as fuel, and for other purposes.	2831	27th Oct. 1870	Jacob Geoghegan Willans.
Steam fire-engines - - - - (*creating vacuum in suction pipes.*)	2836	27th Oct. 1870	Edward Field. Richard Moses Merryweather.
Machinery to be employed for combing wool and other fibres. (*fan.*)	2854	29th Oct. 1870	John Robertshaw.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AIR SUPPLYING, &c.—*continued.*			
Purifying hydrocarbon and rosin oils (*excluding air.*)	2875	1st Nov. 1870	Arthur Charles Sterry. John Sterry.
Pneumatic telegraphs (*Communicated by Edward Augustine Calahan and George Baker Field.*)	2905	3rd Nov. 1870	William Robert Lake.
Smelting or reducing metals from their ores	2938	8th Nov. 1870	Isham Baggs.
Construction of apparatus for concentrating sulphuric acid. (*forming a vacuum.*)	2975	12th Nov. 1870	Auguste Ferdinand De Hemptinne.
Manufacture of sulphates of soda and potassa	3045	21st Nov. 1870	James Hargreaves. Thomas Robinson.
Apparatus employed or used in the manufacture of sulphates of soda and potassa.	3047	21st Nov. 1870	James Hargreaves. Thomas Robinson.
Combined winnowing, screening and blowing machines.	3066	23rd Nov. 1870	John Baker.
Improvements in the manufacture of iron and steel and castings of the same, and in apparatus employed therefor. (*passing air, steam or gas through melted metal.*) (*Communicated by John Ware Middleton.*)	3087	24th Nov. 1870	George Haseltine.
A new or improved method of and apparatus for washing or cleansing whilst in motion the felts used in making paper by machine. (*vacuum roll.*)	3160	2nd Dec. 1870	Thomas John Marshall.
Improvements in blowing engines and in valves for the same, and applicable otherwise.	3174	3rd Dec. 1870	William Hargreaves. William Inglis.
Certain improvements in engines worked by steam and other elastic fluids, and in valves. (*working the air pumps.*)	3176	3rd Dec. 1870	George Holcroft. William Nathan Dack.
Improvements in the means for exhausting or charging receivers, principally applicable for working pneumatic tubes, for raising fluids, and for exhausting steam in steam-engines, including particular arrangements of apparatus for carrying out these several objects.	3255	12th Dec. 1870	Charles William Siemens.
Organs	3279	14th Dec. 1870	Charles Kenwick Kenelm Bishop.
For pneumatic tubes, *see* "RAILWAYS."			
IV.—Ventilation; Supplying and Purifying Air for Buildings, Mines, Ships, Carriages, &c.			
Improved means for warming and ventilating close carriages and boat saloons. (*Communicated by Pierre Grandjean.*)	122	14th Jan. 1870	Henri Adrien Bonneville.
Improvements in apparatus used in the manufacture of gas, part of which apparatus is also applicable for ventilating mines, for promoting combustion, and for pumping, measuring and forcing fluids.	259	28th Jan. 1870	Edmund Small Cathels. David Terrace.
Hats (*insuring ventilation.*)	263	28th Jan. 1870	George Thornhill.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AIR SUPPLYING, &c.—*continued.*			
Motive-power engines and steam generators to be used therewith, suitable for domestic purposes. (*driving ventilators.*) (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johnson.
Fire-places or stoves (*for ventilation.*)	307	2nd Feb. 1870	James Pigott Pritchett.
Ventilation of chimneys and apartments	393	10th Feb. 1870	James Thomson. William Thomson.
Subdividing particles of water and other fluids, and applying the same to sanitary and other purposes. (*for purifying air in sick rooms, &c.*)	596	1st March 1870	Marmaduke Wilkin. John Clark. Adam Scott.
Ships' illuminators or scuttles (*for ventilation.*)	619	2nd March 1870	William Darley.
Waterproof garments (*ventilation.*)	646	4th March 1870	Samuel Cohen.
Improvements in the mounting, working and pointing of guns, and in the construction of the carriages upon which they are mounted. (*ventilating.*)	647	4th March 1870	Robert Anthony Edward Scott.
Improved means of ventilating and reducing the temperature of rooms or apartments in vessels, buildings and other structures.	655	5th March 1870	George Elliot.
Improved apparatus for injecting and reducing liquids to a state of spray or minute subdivision. (*for ventilating rooms.*) (*Communicated by Alcide Sausal du Fay.*)	673	7th March 1870	William Edward Newton.
Improvements applicable to hats and other like coverings for the head.	705	10th March 1870	Henry Sikes Gibson.
An improved hygienic and mecanical hat (*ventilating.*)	763	15th March 1870	Paul Charles Nicolas de Ferrari.
Ventilating lights	818	19th March 1870	John Hockey.
Hats and other like coverings for the head	913	29th March 1870	Frederick John Upton.
Ventilation of hats	940	31st March 1870	Franklin Tocher.
Structures for the preservation of fruits, vegetables, meats and other perishable articles. (*keeping the air pure.*) (*Communicated by Nathan Hellings.*)	1070	12th April 1870	John Henry Johnson.
Means of and apparatus for effecting fumigation, vaporisation and inhalation applicable to medicinal and sanitary purposes	1183	23rd April 1870	Charles Harley Savory. William Robert Barker.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AIR SUPPLYING, &c.—*continued.*			
Ventilation of tunnels - - - - -	1673	9th June 1870	John Dickinson Brunton.
Apparatus for ventilating ships and for extinguishing fires on board same. (*Communicated by Edward Kirk Horn.*)	1705	14th June 1870	George Wells.
A new and improved apparatus for warming and ventilating carriages and boats. (*Communicated by Pierre Grandjean.*)	1816	27th June 1870	Henri Adrien Bonneville.
Apparatus for pumping and forcing air and other fluids, and which apparatus is peculiarly applicable to desiccating the ventilation of mines, buildings, ships and other structures, and for blast and other purposes.	1976	13th July 1870	William Cowley.
Apparatus for warming, vaporising and causing a free circulation of fresh air in horticultural structures and other buildings, which apparatus is also applicable for the ventilation of mines and other places.	2038	20th July 1870	Ambrose Lloyd Taylor.
Ventilating houses and buildings, ships and railway and other carriages, and increasing or decreasing the temperature thereof.	2042	20th July 1870	William Haggett.
Ventilators - - - - - -	2057	21st July 1870	Thomas Alfred Warrington.
Ventilating and heating rooms and other places, and apparatus therefor.	2075	23rd July 1870	Richard Bailey.
Ventilators - - - - - -	2120	28th July 1870	Robert Boyle.
An improved fumigating material - - (*purifying air.*)	2125	29th July 1870	George Cupit Fowler.
Apparatus for preventing smokey chimnies and for ventilation generally.	2179	4th Aug. 1870	John Sycamore.
Improvements in ventilation and in the purification of air.	2200	8th Aug. 1870	James Garth Marshall.
An improved ventilating roller window-blind -	2290	19th Aug. 1870	Arthur Cooper.
Improvements in waterproof garments, which improvements are also applicable to garments in general. (*ventilating.*)	2336	25th Aug. 1870	William Bullock.
Chimney tops and ventilators - - -	2422	6th Sept. 1870	Thomas Murray Gladstone.
Manufacture of "brattice cloths" used in coal and other mines.	2490	15th Sept. 1870	Illius Augustus Timmis.
An improved means or apparatus for ventilating rooms or buildings.	2505	17th Sept. 1870	Thomas Walton.
Apparatus for ventilating stoke holes and engine rooms of steam-ships. - - - - -	2643	5th Oct. 1870	William Rudd Oswald. George Hough.
Construction of illuminating and ventilating roofs and gratings or plates, parts of which are applicable to ordinary footways and carriage ways. (*Communicated by Theodore Hyatt.*)	2755	20th Oct. 1870	John Henry Johnson.
Improvements in fan punkahs and in apparatus in connection therewith.	3034	19th Nov. 1870	Lestock Francis Boileau.
Ventilating sewers by apparatus adapted for that purpose.	3060	23rd Nov. 1870	William Richard Pook.
An automatic ventilator, alarm and pump for vessels. (*Communicated by William FitzJames Thiers, P. D. Rodney and Edward Parkman.*)	3117	28th Nov. 1870	Benjamin Joseph Barnard Mills.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AIR SUPPLYING, &c.—*continued.*			
Boots, shoes, and other coverings for the feet -	3141	30th Nov. 1870	Martin Tobin.
Improvements in the means for exhausting or charging receivers, principally applicable for working pneumatic tubes, for raising fluids and for exhausing steam in steam-engines, including particular arrangements of apparatus for carrying out these several objects. (*ventilating mines.*)	3255	12th Dec. 1870	Charles William Siemens.
Manufacture of non-inflammable brattice cloths -	3348	22nd Dec. 1870	Oswald Brooke. Alfred William Read.
Viaducts adapted both for pedestrian traffic and for the supply of fresh air to buildings in crowded localities. (*Communicated by John Perry.*)	3388	29th Dec. 1870	George Tomlinson Bousfield.
ALKALIES; ALKALINE AND EARTHY SALTS; SILEX, ALUMINE, BARYTES, IODINE AND COMPOUNDS.			
Improvements in treating sulphur, sulphide of hydrogen, pyrites and other compounds of sulphur, and in obtaining products therefrom. - (*obtaining sulphate of soda and sulphate of potassa.*)	46	6th Jan. 1870	James Hargreaves. Thomas Robinson.
Treating shoddy and other animal waste to obtain ammonia and salts of ammonia therefrom. -	58	7th Jan. 1870	Richard Morris. Mulgrave Daniel Penney.
Treatment of acid tars obtained from boghead mineral schist or petroleum. (*sulphate of ammonia and soda.*) (*Communicated by Gervais Chevrier.*)	153	18th Jan. 1870	John Henry Johnson.
Improvements in apparatus for evaporating and concentrating liquids, and in recovering reagents from oil refiners and other bye-products. (*recovering soda.*)	208	22nd Jan. 1870	Frederick Augustus Barrow.
An improved method of re-utilizing caustic soda lye	365	8th Feb. 1870	Emil Krúger.
Manufacture of the carbonates of ammonia -	485	18th Feb. 1870	Isham Baggs.
Improvements in the manufacture of gas and in obtaining residual products from such manufacture, and in apparatus to be used in such manufacture. (*obtaining ammoniacal vapours, &c.*)	510	21st Feb. 1870	Frank Clarke Hills.
A method of producing an improved black pigment and obtaining phosphates and other substances from the waste portions of the hop plant. (*obtaining alkalies, &c.*) (*Communicated by Frederic Rotter.*)	515	22nd Feb. 1870	William Robert Lake.
Improvements in apparatus for evaporating, concentrating and distilling liquids, and in recovering reagents from oil refiners and other bye products. (*recovering soda.*)	793	17th March 1870	Frederick Augustus Barrow.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ALKALIES, &c.—*continued.*			
Preparation of ammoniated sulphuric acid for the manufacture of manure. (*producing superphosphate.*) (*Communicated by Charles U. Shephard, junior.*)	872	24th March 1870	William Robert Lake.
Improvements in obtaining and applying iron and manganese protoxides or their carbonates in obtaining and applying baryta, strontia, and salts thereof in obtaining potash, soda, and sulphur, and in utilising bye or "waste" products arising in the manufactures of chlorine, copper, and alum.	881	25th March 1870	Joseph Townsend.
Preparation of soluble phosphates of lime - - (*Communicated by Ernest Deligny.*)	943	31st March 1870	John Henry Johnson.
Making the carbonates of ammonia - -	1006	6th April 1870	Isham Baggs.
An improved method of treating and utilizing some of the waste products resulting from the purifying of gas in gasworks. (*recovering sulphate of ammonia.*)	1099	14th April 1870	Robert John Everett.
Manufacture of superphosphate of lime - - (*Communicated by Ivar Axel Ferdinand Bang.*)	1142	19th April 1870	Henry Woodcroft Hammond.
Improvements in the decomposition of certain metallic sulphides, and in the production of alkaline compounds, also of a compound of sulphur by such decomposition.	1176	22nd April 1870	William Gossage.
Production of prussiate of potash, prussiate of soda and prussian blue.	1186	23rd April 1870	Peter Spence.
Improvements in obtaining and applying heat, and in furnaces employed therein, also in utilizing a product resulting therefrom. (*for concentrating alkaline solutions.*)	1304	6th May 1870	Thomas Don.
Improvements in the manufacture of artificial alkaloids derived from coal tar, and in the preparation of salts of the said alkaloids.	1425	18th May 1870	John Casthelaz.
Improvements in the manufacture of alum, and in obtaining by products in such manufacture applicable to certain useful purposes.	1676	9th June 1870	Peter Spence.
Improved methods of preparing pure carbonate and bicarbonate of soda, and also soda in its crystallized state. (*Communicated by Moritz Konigmann.*)	1697	13th June 1870	Edward Thomas Hughes.
Producing caustic soda and caustic potash - - (*Communicated by Cyprien Marie Tessie du Motay.*)	1746	17th June 1870	Thomas James Smith.
An improved method of absorbing sulphurous fumes or sulphurous acid, and obtaining thereby useful products. (*obtaining sulphate of soda.*)	1892	4th July 1870	Michael Cahen.
Manufacture of caustic soda - - - (*Communicated by William Helbig.*)	1903	5th July 1870	Edward Thomas Hughes.
Production of sulphuric and hydrochloric acids of carbonates of potash and soda, and also of chlorine. (*Communicated by Haydn Mozart Baker.*)	2065	21st July 1870	John Henry Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ALKALIES, &c.—*continued.*			
Manufacturing carbonate of soda - - (*Communicated by Emil Bergmann.*)	2111	27th July 1870	Patrick Cockburn Don.
Treatment of minerals and ores - - - (*obtaining sulphate of soda.*) (*Communicated by Outhenin Chalandre, senior.*)	2203	9th Aug. 1870	Henri Adrien Bonneville.
Improved means and apparatus for discharging caustic soda from pots. - - -	2298	20th Aug. 1870	George Duncan. George Hutchin. Samuel Morton Harrison.
Manufacture of superphosphate of lime - -	2303	20th Aug. 1870	Campbell Morfit.
Manufacture of soda - - - - -	2399	2nd Sept. 1870	Edward Andrew Parnell.
An improved process for extracting caustic soda and potash, and the carbonates for the same, from their solutions. (*Communicated by François Marie Backet.*)	2401	2nd Sept. 1870	William Robert Lake.
Improvements in the manufacture of salts of ammonia from ammoniacal gas liquor. - -	2418	6th Sept. 1870	Andrew McNiel. William Wheaton.
Manufacture of alum - - - - -	2478	14th Sept. 1870	John Berger Spence.
Manufacture of acids and alkaline salts - - (*Communicated by Haydn Mozart Baker.*)	2866	31st Oct. 1870	John Henry Johnson.
Apparatus for cooling and refrigerating liquids, manufacturing ice, and obtaining ammoniacal solution for the same and other purposes.	2891	2nd Nov. 1870	Rees Reece.
Manufacture of sulphates of soda and potassa -	3045	21st Nov. 1870	James Hargreaves. Thomas Robinson.
Apparatus employed or used in the manufacture of sulphates of soda and potassa. - -	3047	21st Nov. 1870	James Hargreaves. Thomas Robinson.
Manufacture of prussiate of potash and prussian blue.	3208	6th Dec. 1870	Peter Spence.
ANCHORS, LOWERING ANCHORS; MOORINGS.			
Ships' anchors - - - - -	211	22nd Jan. 1870	William Warren.
Anchors - - - - - (*Communicated by Gourney Crow Pattison.*)	906	28th March 1870	William Robert Lake.
Improvements in anchors, and in the gear for facilitating the dropping, weighing, and boarding of anchors.	984	4th April 1870	Frederick Robert Augustus Glover.
Masthead and other hoisting blocks - - (*weighing anchor.*)	1060	13th April 1870	William Angus.
Apparatus for lowering, hauling up, raising, fishing, catting or otherwise manipulating anchors.	2185	5th Aug. 1870	Frederick Robert Augustus Glover.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AXLES, SHAFTS, BEARINGS, JOURNALS, AXLE-BOXES, PACKINGS FOR AXLES, LUBRICATING AXLES, &c.			
A new and improved vehicle to be propelled by manual power. (*Communicated by Jean Louis Charton-Joanot.*)	10	3rd Jan. 1870	William Edward Gedge.
Treatment or preparation of various natural substances, so as to render them applicable for use in journal boxes and other parts of machinery, or other articles whose surfaces are intended to be subjected to friction. (*Communicated by Stuart Gwynn.*)	190	21st Jan. 1870	William Edward Newton.
Improvements in the construction of axle-boxes for railway, tramway and other similar engines, carriages and trucks, and an improved method of lubricating the axles in such boxes.	238	26th Jan. 1870	James Bingham Alliott. Alfred Hardy Sellers.
Certain improvements in the manufacture of coach or carriage axles.	258	28th Jan. 1870	John Rigby.
Improvements in carding engines, which improvements are applicable to other similar purposes. (*bearings.*)	298	1st Feb. 1870	David Robertson.
Mode of reducing the friction of pivots turning on oscillating levers, which system is also applicable to wheeled vehicles especially waggons or railway trucks.	391	10th Feb. 1870	Gilbert Eguillon.
Metallic packing for stuffing-boxes - -	435	15th Feb. 1870	Robert Francis Fairlie.
Railways, tramways, common roads, and machines and vehicles to run thereon. (*axles with taper bearings, axle-boxes.*)	512	22nd Feb. 1870	William Bridges Adams.
Manufacture of axles and shafts of various descriptions. (*Communicated by Marcius Chaney and Antoine Deschamps.*)	558	25th Feb. 1870	Henri Adrien Bonneville.
An improved alloy or metallic compound applicable for the bearings or their lining of bearings of machinery.	616	2nd March 1870	Thomas Short Davis.
Improved means of oiling the bearings and journals of revolving shafts, spindles and pins of reaping and mowing machines. (*Communicated by Walter Abbott Wood.*)	635	3rd March 1870	James Theodore Griffin.
Improvements in the rolling stock of railways and tramways, also partly applicable to ordinary vehicles.	707	10th March 1870	John William Grover.
Lubricators - - - - - - (*for axles.*)	938	31st March 1870	Charles Dudley Austin.
Mechanism for diminishing friction - - (*in shafts for transmitting motion.*) (*Communicated by Jean Baptiste Léopold Favier-Lagaye and Ernest Auguste Verleye.*)	942	31st March 1870	William Robert Lake.
Improvements in weighing machines and in combining machinery for hoisting and weighing goods. (*bearings.*)	962	2nd April 1870	Andrew Ody.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AXLES, &c.—*continued.*			
Improvements in meters for measuring fluids and in packings and counting apparatus to be used therewith, parts of which improvements are applicable to other purposes. (*packing for stuffing boxes.*)	965	2nd April 1870	Henry Law.
Apparatus for lubricating and covering the spindles employed in machinery for preparing, spinning, doubling and winding fibrous materials. (*spindle foot steps.*)	1059	11th April 1870	John Billington Booth.
Construction of engines worked by steam or other motive power. (*shoe-pieces and brasses.*)	1098	14th April 1870	William Simpson. Alfred Gardner.
Improvements in treating copper, zinc, tin and their compounds, and in obtaining metallic compounds or alloys suitable for various useful and ornamental purposes. (*for heavy bushes and bearings.*)	1118	16th April 1870	Andrew Linniere Dowie.
Improvements in the construction of thrust blocks, plummer blocks, and such like mechanism used in steam ships, the said improvements being applicable to all kinds of screw and lifting jacks, and for the bearings of cranes, mill shafts and such like machinery.	1141	19th April 1870	William Brown.
Construction of reaping and mowing machines (*lubricating the pin of the crank wheel.*)	1161	21st April 1870	William Arundell Oatey.
Improvements in the means of and apparatus for crushing ores and other mineral substances, and separating therefrom the metals which they contain, part of which improvements is applicable to the bearings of machinery generally.	1198	25th April 1870	Leonard Wray.
An improved arrangement of gearing for rolling mills.	1256	2nd May 1870	William Anderson.
A new or improved metallic alloy for the bearings or brasses of shafts, axles of carriages and other rotating bodies.	1332	10th May 1870	James Jones. Edward Richard Dunn.
Improvements in meters for measuring fluids, and in packings and counting apparatus to be used therewith, parts of which improvements are applicable to engines for obtaining motive-power from fluids under pressure and to other purposes. (*substitute for stuffing boxes or packings.*)	1363	13th May 1870	Henry Law.
Stuffing boxes (*for shafting.*)	1380	14th May 1870	Charles Ross Simey.
Manufacture of bearings, slides and packings for steam-engines and other machinery. (*Communicated by Eliza Dexter Murfey.*)	1401	16th May 1870	John Henry Johnson.
An improved arrangement of apparatus for diminishing the friction of spindles, axles and other similar rotating bodies. (*Communicated by Ernest Maxime Theodore Cayeux.*)	1462	20th May 1870	Thomas James Smith.
Certain improvements in shafting and in transmitting power.	1496	24th May 1870	Evan Arthur Leigh.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AXLES, &c.—*continued.*			
Supporting apparatus for the rollers of spinning frames. (*to replace bearers.*) (*Communicated by Florentin Augustin Steverlynck-Delecroix, Edmond Steverlynck and Léon Steverlynck.*)	1506	24th May 1870	William Robert Lake.
Carriage axles and beaings - - - (*for roads and railways.*)	1541	27th May 1870	William Morgan.
An improved packing for pistons, piston rods and other rods.	1665	9th June 1870	John Scaife.
Improvements in axle boxes and in means of securing the same upon the axle.	1747	17th June 1870	Ebenezer Partridge.
Treating or preparing certain lubricating oils - (*for shafting journals or bearings.*)	1752	18th June 1870	John Orr Ewing. Joseph James Coleman.
Radiating the axles of locomotive engines -	1817	27th June 1870	John Clark.
Journal bearings and axle boxes chiefly designed for carriages or vehicles running upon rail and tramways. (*Communicated by George Franklin Lynch.*)	1880	2nd July 1870	William Robert Lake.
Mode of connecting wheels and other articles to their shafts and for coupling shafts.	1939	8th July 1870	William Randall Harris.
Improvements in packings and in bearing surfaces, and in the preparation or treatment of materials composing the same. (*Communicated by Eliza Dexter Murfey.*)	1997	14th July 1870	John Henry Johnson.
Apparatus for lubricating the axles of colliery "corves" or "tubs" when in motion.	2058	21st July 1870	Wilfred Creswick.
Construction of axles, shafts for machinery, and other articles.	2137	1st Aug. 1870	Daniel Robert Dossetor.
Improvements in the construction of railway buffer and draw springs and in bearing springs for railway carriages, and in the use of the same for carriages for common roads, such springs being adapted to other purposes. - - -	2144	1st Aug. 1870	Edward Otto. Newton Wilson.
Improved lubricating packing for railway carriage journals. (*Communicated by William Henry Jewell.*)	2153	2nd Aug. 1870	William Robert Lake.
Means and apparatus for working brakes for the rolling stock of railways and tramways, as also for working feed-water pumps in connection therewith. (*stuffing nut.*) (*Communicated by George Westinghouse, junior.*)	2235	11th Aug. 1870	Charles Denton Abel.
Improved methods of effecting the lubrication of and exclusion of dust from carriage axle journals and other bearings, and in apparatus or mechanical devices employed therefor. (*Communicated by Ernest Von Jeinsen and James Monroe McDonald.*)	2294	19th Aug. 1870	William Robert Lake.
Improvements in reaping and mowing machines, parts of which improvements are also applicable to other purposes. - - - - (*lubricating bearings.*)	2329	24th Aug. 1870	William Goulding. Austin Hill.
Flexible shafting and apparatus connected therewith for transmitting power. (*Communicated by James Beall Morrison.*)	2409	3rd Sept. 1870	George Haseltine.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AXLES, &c.—*continued.*			
Improvements in pipe joints or couplings, applicable also to couplings for rods and shafting. (*Communicated by William Clare Allison.*)	2433	8th Sept. 1870	John Henry Johnson.
Construction of railway axles - - -	2503	17th Sept. 1870	Thomas Platt.
Improvements in centrifugal machines in the suspension and driving of the same, and a new or improved combination thereof with other apparatus. (*elastic bearings.*)	2550	23rd Sept. 1870	David McColley Weston.
Modes of regulating the position of card rollers and other articles requiring accurate adjustment. (*adjusting bearings.*)	2575	28th Sept. 1870	Edward Lord.
Working of locomotive engines - - - (*lubricating packing of stuffing boxes.*)	2612	1st Oct. 1870	Joseph Ward.
Improvements in bearings, packings for shafts, spindles, rods and other like pieces of machinery, and in materials employed in the manufacture of such bearings and packings. (*Communicated by Eliza Dexter Murfey.*)	2663	7th Oct. 1870	John Henry Johnson.
Machinery for preparing, spinning, winding and doubling cotton and other fibrous materials, partly applicable to lubricating upright shafts. -	2700	13th Oct. 1870	Robert Lakin. William Henry Rhodes. John Carpenter.
Construction of self-lubricating hubs or bosses for pulleys and wheels.	2704	13th Oct. 1870	David McColley Weston.
New or improved constructions of elastic and flexible metallic or composite packings for the stuffing boxes and other working and jointing parts of steam engines and machinery.	2760	20th Oct. 1870	William Paton.
An improved anti-friction metal for the bearings and steps of shafts, axles, engines and machinery.	2783	22nd Oct. 1870	John Hoyle.
Automatic lubricators - - - -	2797	24th Oct. 1870	Ernest Von Jeinsen.
Manufacture of machines for mincing and cutting animal and vegetable substances. - - (*bearing for propeller shaft.*)	2807	25th Oct. 1870	Frederick William Follows. John Bate.
Ploughs - - - - - - - (*and plough axles.*)	2847	29th Oct. 1870	Richard Hornsby. James Edwin Phillips.
Improvements in boxes and bearings for axles and other shafts and in compositions to be applied thereto. (*and in packings.*) (*Communicated by Eliza Dexter Murfey.*)	2879	1st Nov. 1870	John Henry Johnson.
Improvements in the axles of railway and tramway carriages, and in apparatus to be employed in combination therewith. (*Communicated by Henry Graham Thompson.*)	2925	5th Nov. 1870	John Garrett Tongue.
Lubricating apparatus for upright and other runners and bearings.	3026	18th Nov. 1870	William Cunningham.
Machinery for cutting or shaping wood - - (*step bearings for wood cutting machines.*)	3029	18th Nov. 1870	Allen Ransome.
Bearings for carriage axles - - - (*Communicated by William Henry Downs and Jethro Pencille.*)	3058	22nd Nov. 1870	Alfred Vincent Newton.
Axles and axle boxes for wheeled vehicles - - (*Communicated by Ernest Von Jeinsen and James Monroe McDonald.*)	3165	2nd Dec. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
AXLES, &c.—*continued.*			
Lubricators	3198	6th Dec. 1870	Thomas Ramsden Shaw. Sydney Boardman.
Treating certain mineral lubricating oils and paraffin. (*lubricating bearings.*)	3261	13th Dec. 1870	Joseph James Coleman.
An improved lubricating composition and apparatus for applying the same. (*for shafts and bearings.*)	3339	21st Dec. 1870	Thomas Hopes.
For bearing springs, *see* "SPRINGS."			
BAGS, BASKETS, SACKS, HOLDERS AND FASTENINGS.			
Weaving of seamless articles (*sample bags.*)	270	29th Jan. 1870	Samuel Whitehall Mulloney.
Improvements in india-rubber manufactures and in tools or machinery employed therein. (*sponge bags, tobacco sacks, &c.*)	295	1st Feb. 1870	George Broadhurst. John Swindells. John Kershaw.
Improved means or apparatus for the manufacture of paper bags.	302	2nd Feb. 1870	William Hartley.
Improvements in the treatment of hides and skins in tanning and otherwise utilizing all portions or pieces thereof, and in the treatment of goods already tanned. (*for travelling bags.*)	863	24th March 1870	Henry Richardson Fanshawe. William Henry Smith.
Travelling bags and portmanteaus	1193	25th April 1870	Frederick Daniel Sutherland.
Crates, packing cases and travellers' and other boxes.	1368	13th May 1870	William Young.
Travelling and other bags, cases and boxes	1698	13th June 1870	Fabian James Knewstub.
Apparatus for effecting the delivery of mail bags and parcels to railway trains in motion. (*Communicated by William McCabe and Francis Wayland Glen.*)	1854	29th June 1870	William Robert Lake.
Certain improvements in machinery or apparatus to be employed for manufacturing paper bags.	2326	24th Aug. 1870	Thomas Bibby. James Bibby. John Baron. William Baron.
Machinery for manufacturing paper bags (*Communicated by Margaret E. Knight.*)	2364	29th Aug. 1870	William Robert Lake.
Letter boxes and bags for receiving and containing letters.	2448	10th Sept. 1870	Henry Tristram. Edward Greene Leeman.
Machinery for making paper bags	2457	10th Sept. 1870	Amasa Mason.
Manufacture of woven bags	2753	19th Oct. 1870	James Whitelegge Naylor.
An improvement or improvements in the manufacture of lined or coloured paper bags.	2773	21st Oct. 1870	Henry Hill Stone.
Improvements in the manufacture of terry or cut-pile fabrics and in the application of such fabrics to the manufacture of slippers, shoes, bags and other shaped articles.	2788	22nd Oct. 1870	Archibald Turner.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BATHS AND BASINS, BATHING APPLIANCES.			
Mode or method of supplying baths and other places with hot water.	6	1st Jan. 1870	George Richardson.
Improvements in and connected with waterclosets and other sanitary appliances. (*applicable to wash-hand basins.*)	577	26th Feb. 1870	John Randall Mann.
Improved apparatus for injecting and reducing liquids to a state of spray or minute subdivision. (*applicable as a douche.*) (*Communicated by Alcide Sanial du Fay.*)	673	7th March 1870	William Edward Newton.
Boilers for heating water for baths, and for domestic and other purposes. - - - -	1384	14th May 1870	Frederick Nicholas Meixner. James Watmough.
Improvements in woven fabrics applicable for towelling and other purposes, and in the method of and apparatus for weaving the same. (*for baths.*)	1614	4th June 1870	William Haslam.
Improvements in apparatus for the supply of water to waterclosets, urinals, lavatories, buildings and streets, some of which improvements are applicable to other purposes.	1713	15th June 1870	Henry Law.
An improved arrangement and construction of portable bath. - - - - - -	1810	25th June 1870	John Napier. William Cruickshank.
Improvements in the manufacture of artificial stone, and in articles composed thereof. (*or baths.*)	1822	27th June 1870	William Bennett Adamson.
An improved and combined hydraulic filter and double valve tap. (*supplying baths and wash basins with water.*)	1849	29th June 1870	Samuel Norton.
A new or improved suit or dress and fittings for saving life in water. (*or for bathing.*)	2510	17th Sept. 1870	John Benjamin Stoner.
Construction of cocks and valves - - (*bath cocks.*)	2618	1st Oct. 1870	Frederick James Head.
Apparatus for heating liquids, and for producing a constant circulation of the same therein. (*for supplying baths.*)	2778	21st Oct. 1870	John Stephens.
Apparatus for obtaining, condensing, utilizing and applying mineral and other waters. (*for baths.*)	3202	6th Dec. 1870	Thomas Dunn.
Construction of breakwaters, sea-walls, piers, jetties and other similar constructions. (*piers for bathing.*)	3220	8th Dec. 1870	William Jackson. Thomas Gardner Wilson.
BAYONETS AND DAGGERS.			
Manufacture of table knives and forks, butchers spear, dagger, bowie and other knives.	926	30th March 1870	Joel Lister.
Improvements in breech-loading fire-arms and in fixing bayonets to breech-loading fire-arms.	2809	25th Oct. 1870	Westley Richards.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Bells; Ringing Bells.			
Improvements in bells and in the mode of hanging same. (*Communicated by Auguste Laroÿe.*)	214	24th Jan. 1870	Robert Boyd.
Improvements in treating copper, zinc, tin and their compounds, and in obtaining metallic compounds or alloys suitable for various useful and ornamental purposes. (*for bell metal.*)	1118	16th April 1870	Andrew Linmere Dowie.
Improvements in bells and in the mode of hanging the same. (*Communicated by Auguste Laroÿe.*)	1748	18th June 1870	Alexander Melville Clark.
An improved alarum for public or private buildings, bankers' strong rooms, safes and other depositories intended to contain valuable property and documents. (*applied to bells.*)	2136	30th Nov. 1870	Charles Heirons.
Letter boxes and bags for receiving and containing letters - - - - - (*Ringing a gong or bell.*)	2448	10th Sept. 1870	Henry Tristram. Edward Greene Leeman.
Belts, Braces, Girths and Bands.			
Construction of fasteners for securing together the ends, bands or parts of made-up scarves, neck ties, belts, sashes or other articles of wearing apparel to which such fastenings are applicable.	342	5th Feb. 1870	George Tyler.
Improvements in bale hoops and other bands, and in preparing, fitting, and securing the ends thereof. (*or for joining belts.*)	911	29th March 1870	William McNabb.
Fastenings for braces, belts, bands and straps -	924	30th March 1870	Joseph Cofield.
Improvements in the manufacture of plait and in fastenings therefor, which improvements are applicable for jewellery and other purposes. (*for belts, bands, &c.*)	952	31st March 1870	Robert Atkin.
Certain improvements in metallic adjusters applicable for adjusting braces, garters, and other articles of dress, and which said improvements are also applicable for suspending curtains or other drapery. - - - - -	955	1st April 1870	Frederic Arthur Harrison. Charles Priestland.
Buckles or fastenings for braces, belts, bands and other articles.	1194	25th April 1870	Edward Lawley Parker.
Belts or suspenders for wearing apparel - -	1620	4th June 1870	Edwin Heycock.
Ornamenting of fastenings for braces, belts and bands and other like articles.	1725	16th June 1870	John Henry Brierley.
Buckles for fastening dress belts and other like articles. (*Communicated by Marc André Baudit.*)	1943	8th July 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BELTS, &c.—*continued.*			
Improvements in the means of securing the tabs of boots and other articles, applicable also to the ornamentation of the same, and in the machinery to be employed therein, (*ornamenting leather belts.*)	2017	16th July 1870	George Hartley.
Fastenings for braces, belts, bands and other articles.	2468	13th Sept. 1870	Edward Lawley Parker.
An improved fastening for garments and other articles or purposes. (*for braces.*) (*Communicated by Joseph Edward Dallon.*)	2477	14th Sept. 1870	William Edward Newton.
Connecting the ends of straps or belts - -	2495	16th Sept. 1870	Eli Howarth.
BIRD CAGES.			
Bird cages - - - - -	493	19th Feb. 1870	Matthew Wilson.
BLEACHING AND DECOLOURIZING.			
Improvements in bleaching wool and silk which improvements are applicable also for fixing blue colors. (*Communicated by Jean Baptiste Frezon.*)	75	10th Jan. 1870	John Henry Johnson.
Rag engines - - - - -	132	15th Jan. 1870	Edwin Grundy Wrigley.
Treatment of xyloidine to be employed for purposes useful in the arts. (*bleaching and decolourizing.*)	180	20th Jan. 1870	Daniel Spill.
Hydro-extractors - - - - - (*drying yarns after bleaching.*)	290	1st Feb. 1870	Thomas Markland.
A new method or methods for extracting and purifying mill waste, refuse flock material, and removing dyed colour and re-dying the same into other colours for re-manufacture, for using certain agents employed in the process and thereby making a manure.	530	23rd Feb. 1870	George Rydill.
Preparing, treating, and purifying fibrous vegetable and fibrous animal substances.	588	28th Feb. 1870	Thomas Cattell.
Improvements in the manufacture and application of chlorine and in apparatus employed therein. - (*forming bleaching powder.*)	668	7th March 1870	James Hargreaves. Thomas Robinson.
Bleaching vegetable fibres - - -	693	9th March 1870	Harold Potter.
Yarn holders - - - - - (*and bleaching yarn in cop form.*)	1162	21st April 1870	James Milton.
Improvements in obtaining and applying heat and in furnaces employed therein, also in utilizing a product resulting therefrom. (*using carbonic acid gas in bleaching.*)	1304	6th May 1870	Thomas Don.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BLEACHING, &c.—*continued.*			
Machinery or apparatus employed in the process of bleaching, scouring, dyeing and sizing warps or yarns and fabrics. - - - -	1548	27th May 1870	John Dargue. William Dargue.
An improved stop motion, applicable to machinery or apparatus employed in bleaching, scouring, dyeing, sizing and dressing warps, yarns and fabrics, also in carding and combing wool or other fibrous substances. - - -	1654	8th June 1870	William Dewhirst. Thomas Dewhirst. Joseph Dewhirst.
A new or improved bleaching agent, also applicable for other purposes, together with the mode of and apparatus for producing the same.	1770	21st June 1870	Daniel Collet.
Bleaching and improving vegetable and animal oils and fats.	1937	8th July 1870	Robert Hutchison.
Improvements in the treatment and preparation of materials to be employed in the manufacture of paper and in apparatus to be employed in such treatment and preparation, applicable also wholly or in part to the bleaching of other substances or materials.	1974	13th July 1870	David Adam Fyfe.
Improvements in the production of pulp suitable for the manufacture of paper from wood, straw-grass and other vegetable matter. (*Communicated by August Deininger.*)	2310	22nd Aug. 1870	Frederick Arthur Paget.
Apparatus suitable for scouring, washing, bleaching, dyeing and drying fibrous materials in the raw and manufactured state, and for like purposes. - - - - -	2462	12th Sept. 1870	Thomas Nesham Kirkham. Vernon Francis Ensom. George Spence.
Improvements in the treatment of fibrous materials suitable for the manufacture of paper and in apparatus to be employed therein.	2470	13th Sept. 1870	Thomas Routledge.
Manufacture of bleaching powder by the use of chlorine when diluted with inert gases.	2476	14th Sept. 1870	Henry Deacon.
Improved self-acting machinery for opening, smoothing, spreading and guiding calico cloth and other fabrics for the use of bleachers, dyers, calico printers and others.	2610	1st Oct. 1870	William Birch.
Construction of bowls or rollers used in calendering and other pressing or squeezing machinery. (*bleaching machinery.*)	2827	27th Oct. 1870	Robert Brewitt.
Manufacture of chlorine - - - -	3093	25th Nov. 1870	Henry Larkin. William White.
A new composition for bleaching wool and cotton - (*Communicated by William Joseph Lande.*)	3194	5th Dec. 1870	John Henry Johnson.
BOBBINS AND COP-TUBES.			
Improvements in machinery or apparatus for spinning, twisting or doubling worsted or other fibrous substances, and in means for preparing part of such apparatus. (*producing grooves in bobbins.*)	334	5th Feb. 1870	Michael Stell.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BOBBINS, &c.—*continued.*			
Improvements in or applicable to machinery for spinning and twisting fibrous substances. (*forming tubes for carrying bobbins.*)	900	28th March 1870	John Hopkinson. Robert Newton.
Improvements in machinery for turning, shaping, cutting and boring wood and other substances, and in machinery for preparing cutters or tools for turning. (*making bobbin barrels.*)	933	31st March 1870	Jonathan Sellers.
Yarn holders - - - - - (*tubular hollow spindle of taper form.*)	1162	21st April 1870	James Milton.
Improvements in or applicable to machines for spinning and doubling fibrous materials. (*constructing bobbins.*)	1182	23rd April 1870	George Bernhardt.
An improved spool for lock-stitch sewing machines	1222	28th April 1870	William John Blinkhorn.
Machinery for printing upon spools used for holding thread and like materials. (*Communicated by Ira Dimock.*)	1261	3rd May 1870	Peter Joel Livsey.
Machinery or apparatus for making metal cop-tubes. (*Communicated by James Eaton.*)	1503	24th May 1870	John Henry Johnson.
Machinery or apparatus for manufacturing "spool" or paper tubes for use in spinning machinery. - - - - - (*Communicated by Joseph Geiger and Aloyse Geiger.*)	1805	25th June 1870	James Shackleton. Benjamin Shackleton.
Apparatus for dyeing or otherwise treating yarns (*constructing the reels.*)	1840	28th June 1870	Thomas Paterson Miller. David Miller.
An improved machine for manufacturing spools - (*Communicated by John F. C. Rider and Emerson P. Brownell.*)	1990	14th July 1870	William Robert Lake.
Improvements in the manufacture of "spool" tubes and other tubes of paper, and in dyeing or colouring and marking the same and in machinery or apparatus to be employed therefor.	2292	19th Aug. 1870	William Ambler.
Certain improved appliances to be attached to cotton reels for the ready dividing or separating the cotton as wound off, which said appliances are also applicable for the same or like purposes attached to ladies work stands or boxes.	2840	28th Oct. 1870	Alfred Henry Hart.
Improvements in machinery or apparatus for spinning, twisting or doubling worsted, woollen, cotton, silk or other fibrous substances, and in means for preparing part of such apparatus. (*making grooves in spools.*)	3184	3rd Dec. 1870	Michael Stell.
Sewing machines - - - - (*construction of shuttle bobbins.*)	3320	20th Dec. 1870	William Wemyss Kennedy.
Improved means of and apparatus for securing the corners and other parts of millinery and other boxes and reels. (*reels for trimmings.*)	3379	27th Dec. 1870	Hesketh Hughes.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BONES, IVORY, HORN, PEARL AND SUBSTITUTES.			
Machinery or apparatus for breaking or reducing stones, and for crushing quartz or schist, bones, emery, ores and all mineral and other substances.	497	19th Feb. 1870	Ferdinand Oliver Camroux. George Oliver.
Direct-acting power hammers and machinery for crushing and pulverising. - - - (*crushing bone.*)	715	10th March 1870	Samuel Chatwood. John Sturgeon.
Certain improvements in machinery or appliances for reducing bones, hoofs, horns and other like animal matter to small particles. - -	723	11th March 1870	George Atkin. Edwin Atkin. Alfred Amos Atkin.
Production of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials.	1159	20th April 1870	George William Ley.
Machinery for shaping wood and other materials. (*shaping ivory.*)	1395	16th May 1870	Henry Augustus Biertumpfel. William James Loveday.
Certain improvements in the mode of and apparatus for charring wood, peat, bones and other vegetable and animal matters.	2714	14th Oct. 1870	Frederick Ludewig Hahn Danchell.
Preparation of surfaces adapted for painting, photographic and other printing. (*substitute for ivory.*)	2948	9th Nov. 1870	William Vincent Wallace.
BOOKS, ALBUMS, PORTFOLIOS, BOOK COVERS; BOOK SLIDES OR HOLDERS; BOOK-BINDING.			
Improvements in the means for moistening the sheets of letter book and copying paper and in apparatus connected therewith.	56	7th Jan. 1870	William James Purcell.
A new or improved means of securing or fastening the leaves in music, periodicals and books, applicable for securing together papers of various kinds and samples and patterns.	191	21st Jan. 1870	Franklin Hocking.
Railway time tables and bills - - -	271	31st Jan. 1870	James Hodgson.
Producing end and cover papers for books in order to retain brilliancy of surface.	517	22nd Feb. 1870	Alexander William Bain.
Methods of manufacture and combinations therewith of processes for producing pictorial ornamental and other designs and devices. (*for almanacks, book covers, &c.*)	600	1st March 1870	Benjamin George George.
Apparatus for turning over the leaves of music books, which apparatus is applicable to pianofortes, organs, harmoniums, music stands and similar articles.	612	2nd March 1870	Herbert Crowther.
Certain improvements in books - - - (*application of marginal indexes.*)	773	16th March 1870	William Charles Mitchell.
Manufacture of washable papers - - - (*for ornamenting covers of books and portfolios.*)	799	17th March 1870	Charles Hermann Rost.
An improved album or device for containing photographic or other pictures.	855	23rd March 1870	Middleton Chapman.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Books, &c.—*continued.*			
Improved means for binding music, pamphlets and other papers. (*Communicated by Anthony Morris Crowhurst.*)	1022	7th April 1870	Thomas Adams.
Ornamenting wood, leather and other materials for the manufacture of fancy boxes, furniture, panellings and for other ornamental purposes. (*album and book boards or covers.*)	1058	11th April 1870	Archibald Brown.
Production of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials. (*for book cases.*)	1159	20th April 1870	George William Ley.
An improved spring fastening for securing purses, pocket-books, cigar cases and similar articles, and for other like purposes. (*Communicated by Mathurin Brouard.*)	1244	30th April 1870	William Robert Lake.
Improvements in textile fabrics for book covers and in weaving the same.	1260	3rd May 1870	Alfred Barlow. Henry Browne.
Ornamenting the edges and margins of books and paper.	1587	31st May 1870	John Leighton, senr.
Improvements whereby important documents, letters, invoices and paid bills may be preserved and be readily referred to.	1886	4th July 1870	Henry Blandy.
Frames for porte monnaies, pocket books, cigar cases and similar articles. (*Communicated by Sébastien Jacobsohn and Francois Massin.*)	1893	4th July 1870	William Edward Gedge.
An improved method of impressing, gilding and printing on the edges and covers of books.	2400	2nd Sept. 1870	Robert Leighton.
An improved mode of and apparatus for advertising and distributing business cards and circulars. (*albums.*)	2659	7th Oct. 1870	William Elbert Dando.
An improved method of producing divers coloured letters, figures or other characters upon a card, ticket, label, placard or other like article, or upon any suitable surface for advertising or similar purposes. (*or upon book covers.*)	2687	11th Oct. 1870	Charles John Letts.
Manufacture of leather paper - - - (*for book-binding.*)	2720	14th Oct. 1870	John Harcourt Brown.
An improved method of and apparatus for carrying on secret correspondence. (*or book-keeping.*)	2731	17th Oct. 1870	Joseph Seelie Greenhow. George Onley Gooday.
A new or improved leaf guard and book mark -	2736	18th Oct. 1870	John Knox Dallison.
Improved means of and apparatus for turning over the leaves of music and other books.	2928	5th Nov. 1870	George Dominy.
Holders and portfolios for holding or filing music and other sheets and for other like purposes.	2971	11th Nov. 1870	Frederick Brampton.
Improved machinery or apparatus for doubling, cutting-off, separating and folding paper as delivered from rotary web printing machines. (*for newspapers.*) (*Partly communicated by George Lauder.*)	3031	19th Nov. 1870	George Duncan. William Ashley Wilson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BOOKS, &c.—*continued.*			
Improvements in engraved or ornamented blocks or plates, in the mode or method of producing the same, and in the apparatus or mechanism employed therein, which apparatus is also applicable to other useful purposes. (*for bookbinders.*) (*Communicated by Claus Van Haagen.*)	3366	24th Dec. 1870	John Henry Johnson.
BOOTS, SHOES, LEGGINGS, SKATES; CLEANING BOOTS.			
Boots and shoes	53	6th Jan. 1870	Charles East.
New or improved mechanism or apparatus for bending and otherwise operating upon metals or metallic substances. (*making metallic heels.*)	70	8th Jan. 1870	William Thomson.
A machine or apparatus for cleaning and polishing boots and shoes.	73	10th Jan. 1870	William George Cunningham.
Apparatus for facilitating human locomotion (*skates.*)	94	12th Jan. 1870	Alfred Augustus Hely. John Marshall.
Manufacture of spur boxes (*fitted on to boots.*)	287	1st Feb. 1870	Benjamin Latchford.
Improvements in india-rubber manufactures, and in tools or machinery employed therein. (*webbing for boot gussets.*)	295	1st Feb. 1870	George Broadhurst. John Swindells. John Kershaw.
An improved mode of cutting leather for the soles and heels of boots and shoes.	329	4th Feb. 1870	John Willis. James Southall.
A new and useful machine for moulding, rounding, channelling, and stamping the soles of boots and shoes.	500	19th Feb. 1870	Albert Jeffers.
Improvements in combination tools, which improvements are also partly applicable to scissors, pliers and such like instruments. (*shoemakers' companion.*) (*Communicated by Emile Granier.*)	520	22nd Feb. 1870	Alexander Melville Clark.
An apparatus for the manufacture of the legs of half boots. (*Communicated by Louis Badaracco.*)	524	23rd Feb. 1870	Henri Adrien Bonneville.
Improvements in the manufacture of pressed leather and in machinery employed for this purpose. (*for insoles.*)	543	24th Feb. 1870	Alfred Dickson. Thomas Law.
Crimping machines (*for crimping uppers.*) (*Communicated by Samuel W. Jamison.*)	806	18th March 1870	John Henry Johnson.
Machinery for sewing boots and shoes (*Communicated by Charles Goodyear, junior.*)	821	19th March 1870	William Robert Lake.
Boots and shoes	841	22nd March 1870	Richard Hucknall Rimes.
Improvements in the treatment of hides and skins, in tanning and otherwise utilizing all portions or pieces thereof, and in the treatment of goods already tanned. (*for boot or shoe soles, clumps, &c.*)	863	24th March 1870	Henry Richardson Fanshawe. William Henry Smith.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Boots, &c.—*continued.*			
A new or improved apparatus for registering or indicating figures or numbers applicable to seats of chairs, weighing machines and other useful purposes. (*for boot cleaning, foot rests.*)	950	31st March 1870	Joseph Bailey.
Apparatus for assisting in the pedo-locomotion of the human body. (*wheel or disc attached to boots.*)	959	1st April 1870	Herbert John Haddan.
Machinery for cutting heel and sole pieces or other forms of leather.	1166	21st April 1870	James Thomas Sheppard.
Improvements in the manufacture of boot and shoe heels and tips, and shoes for horses and other beasts of draught and burden, and in machinery and apparatus to be employed therein.	1203	26th April 1870	Horatio Fletcher.
Manufacture of heels for boots and shoes - -	1211	27th April 1870	Walter Hart.
Apparatus for supporting and guiding the work in machines for sewing boots and shoes.	1237	30th April 1870	Daniel Mills.
An improved spring fastening for securing purses, pocket-books, cigar cases and similar articles, and for other like purposes. (*applied to boots, shoes and gaiters.*) (*Communicated by Mathurin Brouard.*)	1244	30th April 1870	William Robert Lake.
Manufacture or production of gaiters, cuffs, mitts or other similar articles.	1293	5th May 1870	William Thornton.
Manufacture of elastic fabrics suitable for gussets (*for boots.*)	1369	13th May 1870	James Miller. James Miller, junior.
Machinery for shaping wood and other materials - (*boot lasts.*)	1395	16th May 1870	Henry Augustus Biertumpfel. William James Loveday.
An improved fastening for leggings, gaiters, stays and corsets.	1417	17th May 1870	Bernard Birnbaum.
Fastenings applicable to purses and such like articles. (*leggings.*) (*Communicated by Paul Sormany.*)	1450	19th May 1870	Joseph Schloss.
Improvements in rolling metallic rods or wire, and in machinery employed for that purpose. (*for shoemakers' awls.*)	1454	19th May 1870	James Partridge Blake.
Machinery for sewing boots and shoes - - (*Communicated by Charles Goodyear, junior.*)	1491	23rd May 1870	William Robert Lake.
Apparatus to expedite the fitting of "uppers" in all kinds of boots and shoes.	1497	24th May 1870	Edward Walbank.
Improvements in the manufacture of soles and heels for boots and shoes and in apparatus employed in such manufacture. - - - (*Communicated by Laurent Hurtault.*)	1588	31st May 1870	William John Barron. Edmund Charles Barron.
An improvement in the manufacture of lasts for the feet.	1615	4th June 1870	William Henry Taplin.
Facilitating the mounting a horse or velocipede or bicycle or other vehicle. (*boot attachment.*)	1618	4th June 1870	Charles Kenney.
Sewing-machines - - - -	1685	11th June 1870	Thomas Greenwood. John Keats.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Boots, &c.—*continued.*			
Machinery or apparatus for pressing and forming heels for boots and shoes, and for other like purposes. (*Communicated by Horace Holley Bigelow.*)	1709	15th June 1870	John Henry Johnson.
Improved mode and means for the indenting of iron for shoe heel tips.	1732	17th June 1870	George Farmer, the younger.
Blacking for boots, shoes and other articles -	1757	20th June 1870	Louis Heim.
Boot trees - - - - -	1795	24th June 1870	Charles Stephens.
Skates - - - - - -	1951	9th July 1870	Sir Charles Henry Pennell.
Improvements in the means of securing the tabs of boots and other articles, applicable also to the ornamentation of the same and in the machinery to be employed therein.	2017	16th July 1870	George Hartley.
Means or apparatus for facilitating the preparation of the uppers of boots and shoes. (*Communicated by Monsieur Giessner.*)	2090	25th July 1870	Philip Schwartz.
Machinery for sewing boots and shoes - - (*Communicated by Charles Goodyear, junior.*)	2173	4th Aug. 1870	William Robert Lake.
An improved fastener for leggings - -	2195	6th Aug. 1870	Morris Hess.
An improved standing bench for boot and shoemakers, locksmiths and other artizans. -	2475	14th Sept. 1870	John Henry Glew. Samuel Henry Lewis.
An improved fastening for garments, and other articles or purposes. (*for boots and shoes.*) (*Communicated by Joseph Edward Dallon.*)	2477	14th Sept. 1870	William Edward Newton.
Machinery for skiving and cutting leather for the manufacture of boots and shoes. - - (*Communicated by Champion Brown and William Childs.*)	2533	21st Sept. 1870	William John Barron. Edmund Charles Barron.
Machines for heeling boots and shoes - -	2535	21st Sept. 1870	Horace Holley Bigelow.
Heels for boots and shoes - - - -	2536	21st Sept. 1870	Horace Holley Bigelow.
Revolving and other heels for boots and shoes - (*Communicated by Joseph Read.*)	2647	6th Oct. 1870	Thomas Jennings.
Certain descriptions of boots and shoes - -	2690	11th Oct. 1870	Alfred Christmas Andrews.
Improvements in the manufacture of boots and shoes or other coverings for the feet, parts of which improvements are also applicable in the manufacture of millstraps or bands, harness, hose pipes and other similar articles, and in the machinery, apparatus or means to be used for effecting such purposes.	2698	12th Oct. 1870	Thomas White.
Improvements in and additions to skates - - (*Communicated by Adam Elijah Clarke.*)	2779	21st Oct. 1870	Robert Marsden.
Improvements in the manufacture of terry or cut-pile fabrics, and in the application of such fabrics to the manufacture of slippers, shoes, bags and other shaped articles.	2788	22nd Oct. 1870	Archibald Turner.
Construction and manufacture of brushes for tube cleaning and other similar purposes. - - (*for shoe cleaning.*)	2808	25th Oct. 1870	William Henry Edwards. Alfred Edwards.
Boots and shoes - - - - -	2880	1st Nov. 1870	Thomas Baker.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Boots, &c.—*continued.*			
A trousers protector or guard, adapted more particularly for muddy weather. (*an attachment to boot heels.*)	2881	1st Nov. 1870	Frederic Hunt.
Self-acting machinery for making and finishing boots and shoes. - - - - -	3048	21st Nov. 1870	Charles Henry Southall. John Blakey.
Boots and shoes - - - - - - (*Communicated by Johann Wolfgan Fisher.*)	3089	24th Nov. 1870	George Haseltine.
Boots, shoes and other coverings for the feet -	3141	30th Nov. 1870	Martin Tobin.
Sewing machines - - - - - - (*for boots and shoes.*) (*Communicated by David Whittemore.*)	3183	3rd Dec. 1870	Edward Thomas Hughes.
Improved means and apparatus for utilizing small pieces of leather in the manufacture of boots and shoes.	3235	9th Dec. 1870	John Blakey.
Improvements in machinery for cutting artificial and other leather, particularly applicable for utilizing waste pieces. (*making lifts for boots.*)	3299	17th Dec. 1870	Joseph Hall.
Improvements in the manufacture of felted fabrics and in the machinery or apparatus employed therein. (*for overalls.*) (*Communicated by Robert Spencer.*)	3404	31st Dec. 1870	William Edward Newton.
Boring, Drilling, Rifling and Punching; Gimlets, Augers and Bracebits.			
Breech-loading fire-arms - - - - - (*rifling the barrels.*)	115	13th Jan. 1870	Albert Bernard Zieschang. Frederick Louis Hugo Schmidt.
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion. (*applying grab links to drills.*)	175	20th Jan. 1870	James Mase Kilner.
Improvements in the manufacture of twisted metal bars to form augers and drills, and an improved composite machine for twisting such augers and drills for screw cutting and for cutting metal rods, bars and tubes. - - - - (*Communicated by Monsieur Jean Boulay.*)	404	11th Feb. 1870	Martin Macdermott. Arthur David Williams.
Improvements in combination tools, which improvements are also partly applicable to scissors, pliers and such like instruments. (*augers or drills.*) (*Communicated by Emile Granier.*)	520	22nd Feb. 1870	Alexander Melville Clark.
Hand punching machines - - -	528	23rd Feb. 1870	Thomas Andrew.
Improvements in the mode of and in machinery for splitting rocks. (*Communicated by John Robb.*)	540	24th Feb. 1870	Edward Primrose Howard Vaughan.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BORING, &c.—*continued.*			
Machinery or machines for type design and color printing on paper and other materials, and creasing, scoring or bending, cutting and perforating the same simultaneously.	562	25th Feb. 1870	Edward Tomlinson.
An improved method of getting coal and for the machinery or apparatus connected therewith. (*drilling.*)	597	1st March 1870	Richard Stuart Norris.
Apparatus for boring - - - - (*Communicated by Floran Ferdinand Villepigue.*)	681	8th March 1870	Auguste Villepigue.
An improved telegraph - - - - - (*perforating the paper strip.*)	765	15th March 1870	Gustav Jaite.
A new or improved ratchet brace or ratchet drill brace and grab combined.	862	24th March 1870	James Gilchrist.
Manufacture of metal bushes for casks or barrels - (*use of hardened steel punch.*)	902	28th March 1870	William Gray. Thomas Biggin.
Improvements in machinery for turning, shaping, cutting and boring wood and other substances, and in machinery for preparing cutters or tools for turning.	933	31st March 1870	Jonathan Sellers.
Forming holes in iron castings - - -	995	5th April 1870	John Pickering.
An improved machine for drilling or boring rocks, chiefly designed for working mines, tunnels and quarries and for submarine operations. (*Communicated by James Asbury McKean.*)	1104	14th April 1870	William Robert Lake.
Improvements in water meters and in apparatus for boring cylinders.	1108	14th April 1870	Edward Pattison Sheldon.
Machinery or apparatus for boring, drilling and turning wood or metal. - - - -	1140	19th April 1870	David Sowden. Reuben Calvert Stephenson.
Machinery for piercing and drilling tangs and scales for table knives and forks, table and butchers' steels and butchers' knives. -	1309	7th May 1870	Joseph Nixon. Jabez Winterbottom.
Improvements in rolling metallic rods or wire and in machinery employed for that purpose. (*for shoemakers' awls*)	1454	19th May 1870	James Partridge Blake.
An improved rock drilling machine - -	1466	20th May 1870	Hermann Osterkamp.
Centre-bits - - - - -	1529	26th May 1870	William Horton.
Improvements in producing rotary motion, applicable to egg beaters, churns, bottle washers, washing-machines, drills, tools and other instruments. (*Communicated by M. W. Robinson.*)	1557	27th May 1870	William James Schlesinger.
Improvements in railway and other carriage wheels by the application of vulcanised india-rubber or any compound thereof. (*perforating the tires.*)	1703	14th June 1870	William Aubrey Chandler.
Improvements in steel washers and in apparatus employed for forming the same. (*punch.*) (*Communicated by William Butcher and George Whitfield Billings.*)	1724	16th June 1870	William Robert Lake.
An improved process of drilling and cutting plane surfaces in the manufacture of crystal, glass or metal ware, and an improved lathe for this purpose. (*Communicated by Georges Blau.*)	1819	27th June 1870	William Edward Gedge.
Machinery for punching metal - - -	1928	7th July 1870	Charles de Bergue.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BORING, &c.—*continued.*			
Improvements in screws and screw-drivers and in machinery for the manufacture of screws. (*punching nicks in head of screw.*)	1971	12th July 1870	John Frearson.
Improvements in pneumatic stamps and hammers, also applicable to machinery for driving piles, cutting, splitting or dressing stone, and for boring rocks.	2011	16th July 1870	William Husband.
Improvements in the means of securing the tabs of boots and other articles, applicable also to the ornamentation of the same and in the machinery to be employed therein.	2017	16th July 1870	George Hartley.
Cutting, boring, grinding and pulverizing stone and other hard substances. (*Communicated by Benjamin Chew Tilghman.*)	2147	1st Aug. 1870	Alfred Vincent Newton.
A machine for striking blows by hammers, and for drilling holes in rock, stone and other hard substances.	2170	4th Aug. 1870	Ingleby Thomas Miller.
Improvements in the manufacture of "spool" tubes and other tubes of paper, and in dyeing or coloring and marking the same, and in machinery or apparatus to be employed therefor. (*perforating the paper.*)	2292	19th Aug. 1870	William Ambler.
Manufacture of twisted metal bars to form augers and drills, and an improved composite machine for twisting such augers and drills and for cutting screws. (*Communicated by Jean Boulay.*)	2220	10th Aug. 1870	Martin Macdermott. Arthur David Williams.
Machinery for compressing air (*for rock drilling machines.*) (*Communicated by Charles Burleigh.*)	2258	13th Aug. 1870	Thomas Brown.
Improvements in rifled small arms and ordnance, in tools or apparatus for rifling the same, and in projectiles for the said ordnance.	2282	18th Aug. 1870	William Hastings Sim.
Improved apparatus for boring in rock, coal, mineral, slate and other similar substances. (*Communicated by Ferdinand Villepigue.*)	2316	23rd Aug. 1870	Martin Macdermott. Arthur David Williams.
Flexible shafting and apparatus connected therewith for transmitting power. (*Communicated by James Beall Morrison.*)	2409	3rd Sept. 1870	George Haseltine.
Machinery for manufacturing type (*punch.*) (*Communicated by William Wallace Dunn.*)	2427	7th Sept. 1870	George Haseltine.
Earth-boring apparatus	2512	17th Sept. 1870	William Alfred Marshall.
Mode of training hops, the sockets for the poles or posts of same and other posts, applicable also for the boring for water. (*Communicated by Eduardo Blythe.*)	2705	13th Oct. 1870	David Munroe Childs.
Machinery for making wrought-iron railway sleepers, and applicable for shaping metals for other purposes. (*punching holes.*)	2763	20th Oct. 1870	Matthew Andrew Muir. James McIlwham.
Cutting, boring, grinding and pulverizing stone and other hard substances. (*Communicated by Benjamin Chew Tilghman.*)	2900	3rd Nov. 1870	Alfred Vincent Newton.
Mode of and machinery for tunnelling, mining and coal cutting. (*drilling.*)	2927	5th Nov. 1870	William Low.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BORING, &c.—*continued.*			
Machinery for tracing and multiplying patterns, designs and such like. (*perforating designs on paper.*) (*Communicated by F. Henry Langsdorff.*)	2930	7th Nov. 1870	Bobert Boyd.
Advertising and apparatus connected therewith - (*punching, perforating.*)	2944	8th Nov. 1870	Henry Cyrus Symons.
Improvements in hardening steel pens and other steel articles and in apparatus employed for that purpose. (*awl blades.*)	3023	18th Nov. 1870	Richard Hipkiss.
Machinery for cutting or shaping wood - - (*boring bolt holes.*)	3029	18th Nov. 1870	Allen Ransome.
Machinery for drilling or boring rocks and other mineral substances in mining, tunnelling, quarrying and other like operations.	3131	29th Nov. 1870	Fenner Ballou Taylor.
Improvements in the construction of spindles and flyers for roving and slubbing frames, and in tools or machinery for making the same. (*punching flyer sockets.*)	3191	5th Dec. 1870	James Johnson. John Lowe. Joseph Fowler.
Punching and shearing apparatus - - -	3297	17th Dec. 1870	Robert Baird.
For holeing and drilling coal, *see* "MINING."			
BOTTLES AND JARS; STOPPERS, CAPSULES AND CORKS; STOPPERING, CLOSING AND OPENING BOTTLES AND JARS; CORK-SCREWS; BOTTLE HOLDERS.			
Machines for bottling soda-water and other gaseous or effervescing liquids. - - - - (*Partly communicated by Gustavus Davis Dows.*)	102	12th Jan. 1870	Adolphus Clark. Abraham Van Winkle.
Improvements in stoppers for jars, carboys, bottles, casks and other vessels, and in the manufacture of such articles to which the stoppers may be applied.	135	17th Jan. 1870	Thomas Welton.
Improved apparatus for decanting liquids - -	217	24th Jan. 1870	Thomas Bentley.
Improvements in the construction of bottles intended to contain aërated and other liquids, and in the mode of stoppering the same and other similar vessels.	291	1st Feb. 1870	Charles William Fuller.
Arrangement and construction of cases for bottles, glasses or drinking cups and other articles. (*Communicated by Jules Mathieu.*)	438	15th Feb. 1870	Henry Bernoulli Barlow.
Manufacture of stoppers for bottles of all kinds -	478	18th Feb. 1870	Charles Armand Roger. Charles Martial Gallet.
Improvements in combination tools, which improvements are also partly applicable to scissors, pliers and such like instruments. (*corkscrews, &c.*) (*Communicated by Emile Granier.*)	520	22nd Feb. 1870	Alexander Melville Clark.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BOTTLES, &c.—*continued.*			
Caps for scent and other bottles or vessels - -	590	28th Feb. 1870	Henry William Dee.
Bottles for containing aërated and similar liquids under pressure.	794	17th March 1870	John Walker.
Stoppering bottles, jars, pots and analogous recipients.	958	1st April 1870	Jean Louis de Negroni.
Improved apparatus for filling glass bottles and jars with soups, jellies, fruits and other edibles for the purpose of preserving them, the said apparatus being also applicable for filling bottles with sauces, wines, spirits, beer, liqueurs, and other still and effervescing beverages; also machinery in combination with the above apparatus for corking or stoppering such said bottles and jars.	989	5th April 1870	James Winter the younger.
Certain improvements in the construction of receptacles for containing liquids to facilitate the control of egress or delivery therefrom.	1109	16th April 1870	Henry Brooks.
Apparatus for shaping plastic materials - - (*forming earthenware bottles.*)	1126	18th April 1870	William Fullarton Murray. Thomas Duncan McFarlane.
Means of stoppering or closing the necks, mouths or openings of bottles, jars and other similar vessels.	1218	27th April 1870	John Underwood.
An improved combined self-closing stopper and whistle for the mouth-pieces of speaking tubes, which stopper may also be adapted to bottles and other vessels, and to cocks, taps and other articles for regulating the flow of liquids.	1258	2nd May 1870	James Leetch.
Cooling or refrigerating beer, liquors or beverages, and apparatus therefor. (*decanting or cooling wines, &c.*)	1481	23rd May 1870	William Edwin Heath.
Improvements in producing rotary motion applicable to egg beaters, churns, bottle washers, washing-machines, drills, tools and other instruments. (*Communicated by M. W. Robinson.*)	1557	27th May 1870	William James Schlesinger.
An improved ink or mucilage stand - - (*fountain mucilage bottles.*) (*Communicated by Doctor Franklin Thomas Grimes.*)	1585	31st May 1870	William Edward Newton.
An improved stopper for bottles, and bottle for containing gases, or gases combined with liquids, such as aërated beverages, whereby an improved mode of stoppering such bottles can be effected.	1639	7th June 1870	Lauchlan Rose.
Preparation of corks for rendering them impermeable, and to preserve them from decay. (*Communicated by Auguste de Müller.*)	1670	9th June 1870	Charles Denton Abel.
An improved cork, stopper or plug - - -	1730	17th June 1870	Gilbert Stanton Fleming.
Improvements in bottles or flasks, and an improved device for uncorking said bottles or flasks.	1738	17th June 1870	Johan Anderson Lindblad.
Bottles and stoppers and other articles to be employed therewith, some of which are applicable to other purposes, and the manufacture thereof.	1749	18th June 1870	Alexander Southwood Stocker.
Machinery for cutting corks - - - (*Communicated by Louis Dollone.*)	1751	18th June 1870	William Edward Gedge.
Metallic jugs - - - - - -	1851	29th June 1870	George Chadford Lee.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BOTTLES, &c.—*continued.*			
Improvements in the manufacture of stoppers for bottles and other vessels, and in the means employed in such manufacture.	2095	25th July 1870	Henry Brooks.
An improved cork drawer - - -	2116	28th July 1870	Richard Alphaeus Gooding.
Improved apparatus for facilitating the withdrawal of liquids from flasks, bottles, jars and other vessels. (*or as a stopper.*)	2280	18th Aug. 1870	Henry William Dee.
The preservation of gloves from the injuries accruing to them from tropical heat, and for the partial restoration of their colour when faded by wear and exposure. (*constructing bottles.*)	2302	20th Aug. 1870	Frederic Sydenham Clarke.
Stoppers for bottles, jars, casks and other vessels, and tubes and implements connected therewith.	2370	30th Aug. 1870	Francis Coombes.
Improved apparatus for filling glass bottles and jars with soups, jellies, fruits and other edibles for the purpose of preserving them, the said apparatus being also applicable for filling bottles with sauces, wines, spirits, beer, liqueurs and other still and effervescing beverages, also machinery in combination with the above apparatus for corking or stoppering such said bottles and jars.	2635	4th Oct. 1870	James Winter the younger.
Improvements in stoppers for bottles and in the means of securing stoppers in bottles. - -	2679	10th Oct. 1870	Nicholas Domaille. Peter Collas.
Apparatus for securing corks and stoppers in bottles.	2701	13th Oct. 1870	Joseph Baker Philips.
Apparatus for shaping plastic materials - - (*earthenware bottles.*)	2724	15th Oct. 1870	William Fullarton Murray. Thomas Duncan McFarland.
Corkscrews - - - - - (*Partly communicated by Robert Stothert Kirkpatrick.*)	2841	28th Oct. 1870	Edwin Sunderland.
Improvements in bottles and in the mode of stopping or closing the same.	3070	24th Nov. 1870	Hiram Codd.
Apparatus for drawing off and measuring liquids - (*or filling bottles.*)	3351	22nd Dec. 1870	Charles Alexander Calvert.
Manufacture of hollow vessels, and dished, sunken or tubular shapes or forms in metal - -	3354	22nd Dec. 1870	William Thomas Watts. Daniel Joseph Fleetwood.
BOXES, TRUNKS, PORTMANTEAUS, LETTER-BOXES, WORK-BOXES, DRESSING-CASES, CANISTERS, CANS.			
Cases or apparatus for transmitting and exhibiting cut flowers.	110	13th Jan. 1870	William Floyd Chapman.
An improved means or method of exhibiting names, photographs, views, designs, or sketches in monuments, door or other knobs, boxes, walking sticks, umbrellas and various other articles. - - - -	112	13th Jan. 1870	Joseph Wright. Joseph Cryer. Edwin Rhodes.
Letter boxes, letter pillars and such like depositories	206	22nd Jan. 1870	William Dennis.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Boxes, &c.—*continued.*			
Manufacture of boxes, cases and analogous articles. (*Communicated by Jules Trottier.*)	325	4th Feb. 1870	William Edward Gedge.
Construction of caskets or boxes for jewels and other articles. (*Communicated by Jules Mathieu.*)	437	15th Feb. 1870	Henry Bernoulli Barlow.
Arrangement and construction of cases for bottles, glasses or drinking cups, and other articles. (*Communicated by Jules Mathieu.*)	438	15th Feb. 1870	Henry Bernoulli Barlow.
Manufacture of gelatine capsules or transparent covers or cases for thread, cotton or other articles.	479	18th Feb. 1870	Louis Edouard Peyroumil.
Boxes for containing furs and protecting them from the ravages of insects.	672	7th March 1870	Henry Herbert.
An improved holder for cartridges - - - (*Communicated by Pierre Marie Fouque.*)	739	12th March 1870	Achille du Bled. Paul Chenaillier. Jean Auffret.
Apparatus for holding postage and other stamps for office and general uses. (*Communicated by G. Cliffe Hatch.*)	800	17th March 1870	Thomas James Smith.
Improvements in the manufacture of boxes and cases, and in the modes or means of ornamenting and rendering the same wet-resisting or damp-proof.	813	18th March 1870	William Austin.
Construction of iron wine bins - -	854	23rd March 1870	Charles Farrow. Richard Brooker Jackson.
Machinery or apparatus for soldering tin cases or canisters or other similar vessels.	945	31st March 1870	John Moir Clark.
Signals and name plates to be used in connection with letter boxes.	1001	6th April 1870	Ellis Lever.
Cases for cigars and other articles - -	1013	6th April 1870	George Henry James. Josiah James.
Ornamenting wood, leather and other materials for the manufacture of fancy boxes, furniture, pannellings, and for other ornamental purposes.	1058	11th April 1870	Archibald Brown.
Travelling bags and portmanteaus - -	1193	25th April 1870	Frederick Daniel Sutherland.
Machinery or apparatus for soldering tin cases or canisters or other similar vessels.	1230	29th April 1870	John Moir Clark.
An improved spring fastening for securing purses, pocket-books, cigar cases and similar articles, and for other like purposes. (*Communicated by Mathurin Brouard.*)	1244	30th April 1870	William Robert Lake.
Apparatus for copying letters and other manuscripts or documents. - - - (*box with upward pressure.*)	1271	3rd May 1870	John Guy. Charles John Guy. Frederick Spencer Guy.
Crates, packing cases and travellers' and other boxes.	1368	13th May 1870	William Young.
An improved fastener more particularly applicable to boxes, packing and other cases.	1397	16th May 1870	Walter Gilbey.
Holding frames or brackets or apparatus for holding and securing cash, deed and jewel boxes, or other portable articles of value.	1426	18th May 1870	James George Charlick.
Cases or receptacles for needles, pins, matches, pens, cards, stamps, photographs, cotton and other similar articles.	1473	21st May 1870	William Avery.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Boxes, &c.—*continued.*			
An improved case holder or receptacle for matches, and a mode of manufacturing such case holder or receptacle. (*Communicated by Eugene Haussmann.*)	1493	23rd May 1870	Michael Henry.
Hinges - - - - - (*for box lids.*)	1630	6th June 1870	William McLean.
Travelling and other bags, cases and boxes -	1698	13th June 1870	Fabian James Knewstub.
Improvements in walking-sticks, and in sticks or handles for umbrellas, parasols and sunshades, and in certain other portable articles mainly composed of wood or cane. (*snuff boxes.*)	1736	17th June 1870	Charles August Bluemel.
Fastenings for boxes, wine cases and other articles.	1740	17th June 1870	George Octavius Wray.
Construction of boxes or cases for containing eggs, glass, crockery or other articles requiring to be packed separately. (*Communicated by James McCree.*)	1786	23rd June 1870	William Spence.
An improved case for the conveyance of plants -	1830	27th June 1870	William Bull, F.L.S., F.R.H.S.
Frames for portemonnaies, pocket books, cigar cases and similar articles. (*Communicated by Sébastien Jacobsohn and Francois Massin.*)	1893	4th July 1870	William Edward Gedge.
An improved method of incorporating metal and cement in the construction of tanks, boxes, vases or pots for horticultural and other purposes, water and other pipes and conduits, artificial ponds, reservoirs, basins and rivulets, embankments of watercourses and analogous works. (*Communicated by Joseph Monier.*)	1999	15th July 1870	William Edward Gedge.
Mechanism arranged in combination with the locks of boxes, dressing and other cases, desks, drawers, cupboards or other similar receptacles to facilitate the opening thereof. - -	2037	20th July 1870	John Dyus. George John Parry.
The preservation of gloves from the injuries accruing to them from tropical heat, and for the partial restoration of their colour when faded by wear and exposure. (*constructing cases.*)	2302	20th Aug. 1870	Frederic Sydenham Clarke.
A novel application of stereoscopic views to match-boxes and other boxes or cases.	2408	3rd Sept. 1870	Hippolyte Fontaine.
Letter boxes and bags for receiving and containing letters. - - - - -	2448	10th Sept. 1870	Henry Tristram. Edward Greene Leeman.
Machinery and tools for pressing washers, bucket cars, box clips and similar articles out of sheet metal. - - - - -	2563	24th Sept. 1870	George Price. George Arthur Price.
A new or improved protective opening or mouth to public and private parcel and letter boxes.	2666	8th Oct. 1870	Charles Anthony Wheeler.
Boxes for containing furs and protecting them from the ravages of insects.	2737	18th Oct. 1870	Charles Cook.
Improved locks or fasteners for doors, gates, boxes and other similar purposes.	2785	22nd Oct. 1870	Abel Edgar Samels.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Boxes, &c.—*continued.*			
Certain improved appliances to be attached to cotton reels for the ready dividing or separating the cotton as wound off, which said appliances are also applicable for the same or like purposes attached to ladies' work stands or boxes.	2840	28th Oct. 1870	Alfred Henry Hart.
An improved means of advertising - - (*in match boxes.*) (*Communicated by Henry Gustave Adrien Pécoul.*)	2908	3rd Nov. 1870	Alexander Melville Clark.
An improvement in boxes for containing furs -	2956	10th Nov. 1870	Thomas Henry Simmonds.
Safes or receptacles designed to serve as coal boxes, as show-cases for shops, and for other like purposes. (*canister for grocers.*) (*Communicated by Benjamin Richard Deacon.*)	3016	17th Nov. 1870	George Haseltine.
Machinery for cutting or shaping wood - - (*for box making.*)	3029	18th Nov. 1870	Allen Ransome.
An improved box or case for containing jewels, deeds and other valuables, applicable also as a toy puzzle.	3032	19th Nov. 1870	Rupert Drury.
An improved construction of cartridge box - - (*Communicated by Henry D. Cooke, junior.*)	3215	7th Dec. 1870	Alfred Vincent Newton.
Improvements in holders for continuous matches, and in binding materials for making continuous and other matches. - - -	3246	10th Dec. 1870	William Perkins. George Grainger Tandy.
Boxes or receptacles for reels to regulate the unwinding of the thread therefrom.	3334	21st Dec. 1870	Peter Charles.
Improvements in engraved or ornamented blocks or plates, in the mode or method of producing the same, and in the apparatus or mechanism employed therein, which apparatus is also applicable to other useful purposes. (*for case makers.*) (*Communicated by Claus Van Haagen.*)	3366	24th Dec. 1870	John Henry Johnson.
Match and fusee boxes - - -	3374	24th Dec. 1870	Louis Petre. Charles Petre.
Improved means of and apparatus for securing the corners and other parts of millinery and other boxes and reels. (*and packing-cases.*)	3379	27th Dec. 1870	Hesketh Hughes.
Bread, Biscuits and Pastry; Bakers' Ovens.			
An improved process for preserving bread in a reduced bulk. (*Communicated by Jean Joseph Auguste Mouriés.*)	184	21st Jan. 1870	William Edward Gedge.
Motive-power engines and steam generators to be used therewith, suitable for domestic purposes. (*driving kneaders.*) (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BREAD, &c.—*continued.*			
Kneading and mixing machines	331	5th Feb. 1870	William Whieldon.
Means and utensils employed with apparatus used in cooking, combining arrangements for burning a light, forming a complete "kitchener." (*baking bread.*)	658	5th March 1870	Ebenezer Stevens.
An improved portable oven, a modification of which may also be used for heating apartments. (*for baking.*)	964	2nd April 1870	James Wadsworth.
An improved combination of articles used for culinary purposes. (*flour dredger, cutter for dough, cakes, &c.*) (*Communicated by Sydney Cooke.*)	1146	19th April 1870	Charlotte Cooke.
An improved liquid for raising paste or dough	1396	16th May 1870	Arthur Sauer. Gustave Sauer. Leonce Cachal.
Machinery or apparatus for mixing and kneading dough and other ingredients, and for working the same into bread, biscuits and other pastry, and also applicable to other purposes.	1809	25th June 1870	Stephen Norris. Thomas Griffiths.
Improvements in machinery or apparatus and vessels for feeding, dusting, stirring, mixing or kneading flour, and heating or boiling water or liquids, for the manufacture of bread, biscuits, cakes, puddings, paste, buns, muffins, crumpets and other articles of food, which improvements are also applicable for heating and mixing, heating or boiling various ingredients or plastic substances, churning or other purposes.	1875	2nd July 1870	Ebenezer Stevens.
Ovens (*Communicated by Hosea Ball.*)	2052	20th July 1870	Benjamin Joseph Barnard Mills.
An improved mixture and preparation of coffee and tea. (*bread, biscuits and cakes.*)	2160	3rd Aug. 1870	James Spratt.
Improvements in the construction of bakers' ovens and in apparatus connected therewith.	2378	31st Aug. 1870	John Adair.
An improved oven for baking biscuits, bread and other aliments.	2607	30th Sept. 1870	Edward Wylam.
An improved machine for cutting and printing lozenges and crackers. (*Communicated by Ernest Greenfield and Philipp Strauss.*)	2934	7th Nov. 1870	Alexander Melville Clark.
BREAKS, SKIDS AND BUFFERS FOR CARRIAGES AND RAILWAYS.			
A new and improved vehicle to be propelled by manual power. (*Communicated by Jean Louis Charton-Joanot.*)	10	3rd Jan. 1870	William Edward Gedge.
Improvements in breaking or retarding railway trains and in the apparatus or means employed therefor.	262	28th Jan. 1870	Robert Hogg Durie.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BREAKS, &c.—*continued.*			
Brakes for two-wheel carriages - - -	335	5th Feb. 1870	William Snaydon.
Brakes for carriages - - - - -	384	9th Feb. 1870	William Bevitt. Thomas Strickland.
Improved safety apparatus for locomotives and brake wagons.	454	16th Feb. 1870	Laurence Hill.
An improved apparatus for producing rotary motion.	615	2nd March 1870	Charles Ernest de Lorière.
Improvements in the application of power for the propulsion of vehicles on common roads or railways, and in apparatus connected therewith. (*Communicated by Henri Adolphe Corbin.*)	664	5th March 1870	Alexander Melville Clark.
Apparatus for working railway brakes - -	828	21st March 1870	James Stirling.
Improvements in locomotion and in the means to be employed therein. (*using guide wheels as breaks.*) (*Communicated by Nicolas Joly.*)	847	22nd March 1870	John Henry Johnson.
Brakes and starting apparatus for railway carriages (*Communicated by Edward Pugh Jones.*)	1073	12th April 1870	William Robert Lake.
Steam carriages for common road locomotion - (*Communicated by Jean Baptiste Gabriel Marie Frederic Piret.*)	1273	3rd May 1870	Alexander Melville Clark.
An improved brake applicable to the rolling stock of railways and other vehicles.	1278	4th May 1870	Charles Exter.
An internal spring coupling and brake for transmitting, stopping or regulating motion. -	1777	22nd June 1870	Leandre Mégy. Joseph de Echeverria. Felix Bazan.
An improved friction brake for cars and other purposes. (*Partly communicated by William Leaver.*)	1826	27th June 1870	Elijah Warren Sandford.
Improvements in repairing worn or damaged rails of permanent way, and in the combination and arrangement of machinery or apparatus employed therein. (*sliding skids.*)	2009	15th July 1870	Hugh Baines.
A new propulsion engine to be used for propelling bodies through the water and through the air, and for breaks to railway locomotives and other engines.	2040	20th July 1870	William Murray Ross.
Improvements in the construction of railway buffer and draw springs and in bearing springs for railway carriages, and in the use of the same for carriages for common roads, such springs being adapted to other purposes. - - -	2144	1st Aug. 1870	Edward Otto. Newton Wilson.
A self-acting brake for wheel carriages - -	2225	10th Aug. 1870	Henry Wycherley. John Wycherley.
Means and apparatus for working brakes for the rolling stock of railways and tramways, as also for working feed-water pumps in connection therewith. (*Communicated by George Westinghouse, junior.*)	2235	11th Aug. 1870	Charles Denton Abel.
Apparatus applicable to the brakes and other parts of two-wheeled carriages.	2482	15th Sept. 1870	William Snaydon.
An entire new system for constructing permanent way with improved method of constructing and working rolling stock in connection therewith.	3230	9th Dec. 1870	Edmund Beatty Lockyer.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BREAKS, &c.—*continued.*			
An improved electrical brake for railway carriages - (*Communicated by Joseph Olmstead.*)	3266	13th Dec. 1870	William Robert Lake.
A new system of railway adapted for the traffic of crowded streets of cities or towns or other places, of carriages for such railway, and means for propelling and stopping the same, part of which is applicable to the ordinary railway system.	3386	28th Dec. 1870	William Robertson.
Improvements in hydraulic breaks for railway rolling stock, partly applicable to the supplying of the tender or feed tank with water.	3395	30th Dec. 1870	George Pearson Renshaw.
BREWING, FERMENTING, MAKING FERMENTED AND UNFERMENTED BEVERAGES; TREATING MALT AND HOPS.			
Preparation of fermentable saccharine matters -	205	22nd Jan. 1870	William Garrison.
Treating sour beer to remove its acidity - -	241	26th Jan. 1870	William Juby Coleman.
Treatment of certain substances for food and for manure. (*liquid refuse of grain.*)	260	28th Jan. 1870	James Dewar.
Refrigerating for the manufacture of ice and other purposes. (*cooling worts.*)	267	29th Jan. 1870	Henry Joseph West.
Preparing and drying yeast - - -	358	8th Feb. 1870	John Ward. John Bowing.
Improvements in fire-places for generating steam and in other furnaces where great heat is required. - - - - - (*for brewers.*)	387	9th Feb. 1870	John Martin Stanley. William Atkins.
Machinery or apparatus for pressing spent hops, grains, beetroot or other substances used in the processes of brewing and distilling to extract liquor or moisture therefrom - - -	389	10th Feb. 1870	Charles Pontifex. Frederick Pontifex. Anthony Sherwood.
An improved apparatus or receptacle for storing and for withdrawing wine or other liquids, part of which apparatus is also applicable wherever a tap may be required.	481	18th Feb. 1870	Richard Hunt.
Improved apparatus for injecting and reducing liquids to a state of spray or minute subdivision. (*lowering the temperature in breweries.*) (*Communicated by Alcide Sanial du Fay.*)	673	7th March 1870	William Edward Newton.
A new apparatus for watering gardens, lawns and other purposes. (*watering malt.*)	721	11th March 1870	John Wright.
Improvements in kilns or apparatus for drying malt. (*Communicated by Robert Overbeck.*)	769	15th March 1870	William Edward Newton.
Construction of iron wine bins - - -	854	23rd March 1870	Charles Farrow. Richard Brooker Jackson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BREWING, &c.—*continued.*			
Means of and apparatus for indicating or registering goods raised or lowered in breweries, granaries, warehouses and other buildings. (*see "Hoists."*)	871	24th March 1870	Louis Watson. Julius Hall.
Brewing fermented liquors	895	26th March 1870	William Bailey.
A new or improved apparatus applicable to barrels, casks or vessels for the preservation of fermented liquors.	939	31st March 1870	Antonio Batalha Reis.
Apparatus for drying grain, malt, roots, spent malt or hops, megass or spent sugar cane, wool and other substances.	966	2nd April 1870	Henry Jackson.
Improved apparatus for filling glass bottles and jars with soups, jellies, fruits and other edibles for the purpose of preserving them, the said apparatus being also applicable for filling bottles with sauces, wines, spirits, beer, liqueurs and other still and effervescing beverages, also machinery in combination with the above apparatus for corking or stoppering such said bottles and jars.	989	5th April 1870	James Winter, the younger.
Apparatus for "cleansing" beer and other fermentable liquids.	1029	7th April 1870	Charles Clinch.
A new and improved unfermented and unintoxicating malt liquor.	1062	12th April 1870	Charles Henry Newman.
Improvements in the manufacture and in the securing of tubes, taps and plugs in boilers and other vessels, also in certain modes of regulating and stopping the flow of liquids, gases, or air into or from such vessels. (*and for beer refrigerators.*)	1180	22nd April 1870	Charles Lungley.
Preparation of malt for brewing, colouring, flavouring and keeping ales and other fermented liquors.	1249	2nd May 1870	Sidney William Stanbridge.
Brewing ale and other malt liquors (*Communicated by James McCormick.*)	1336	10th May 1870	William Robert Lake.
Preparing, clarifying and preserving vegetable juices and other liquids. (*wines, malt liquors, &c.*)	1371	13th May 1870	James Heddle.
Apparatus or vessels for cooling (*ale and stout.*)	1386	14th May 1870	John Warne.
An improved liquid for raising paste or dough	1396	16th May 1870	Arthur Sauer. Gustave Sauer. Leonce Cachal.
Enveloping medicinal and other liquids (*and refreshing or stimulating liquids.*)	1469	20th May 1870	Jules Joseph Denoual.
Cooling or refrigerating beer, liquors or beverages, and apparatus therefor.	1481	23rd May 1870	William Edwin Heath.
Improved machinery for making ice and for other refrigerating purposes. (*for breweries.*)	1579	30th May 1870	Leon Mignot.
An improved baker's barm or yeast	1774	22nd June 1870	Patrick Boland.
Improvements in apparatus for cooling liquids, which improvements are also applicable to distillation and surface condensation.	1814	27th June 1870	Robert Morton.
Improvements in the manufacture of artificial stone and in articles composed thereof. (*wine bins.*)	1822	27th June 1870	William Bennet Adamson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BREWING, &c.—*continued.*			
Improvements in machinery and arrangements for cleaning and reducing wheat, maize, beans, peas and other seeds into flour or semolina, part of which improvements are applicable to machinery for pulverising or reducing other substances. (*cracking malt.*)	1895	5th July 1870	Thomas Carr.
Improvements in drying malt, grain and other substances and in the apparatus therefor. (*Communicated by Attilio R. Petracchi Helem Merrill, Robert Heneage and Henry Spendelow.*)	1969	12th July 1870	Nicholas Constantine Maximos.
Process and apparatus employed for drying and roasting coffee, chicory, malt and other vegetable substances, also applicable to baking and desiccation generally.	1973	13th July 1870	John Ambrose Coffey.
Mechanical arrangements for cooling and heating liquids and other substances.	1994	14th July 1870	Henry Wilson.
Apparatus for preparing finings for fining beer and other liquors. (*Communicated by Alfred Terry.*)	2021	18th July 1870	St. George Augustus Terry.
Improved means for drying substances impregnated with moisture. (*hops and malt.*)	2045	20th July 1870	Thomas Meredith Hopkins.
Drying apparatus for drying agricultural animal and chemical and commercial products.	2145	1st Aug. 1870	William Alfred Gibbs.
Improvements in the preparation of worts whereby an improved yield is obtained with a residue suitable to be employed in the manufacture of paper, also in the employment of such residue, whether obtained in the preparation of worts or from other sources in the manufacture of paper. (*brewers' worts.*)	2231	11th Aug. 1870	Solomon Bennett.
An improved machine for reducing "isinglass" or brewers' finings.	2245	12th Aug. 1870	James Gale. Henry Ormston.
An improved screen-wire for dressing wheat and other grain, which web is also applicable to dressing sieves generally, and for the floors of malt and other drying kilns.	2429	8th Sept. 1870	William Silcock.
Apparatus for raising and drawing off liquids (*beer, &c.*)	2522	20th Sept. 1870	Adolphus Frankenberg.
Construction of cocks and valves (*beer cocks.*)	2618	1st Oct. 1870	Frederick James Head.
Apparatus for cooling or refrigerating liquids (*for brewers.*)	2673	8th Oct. 1870	Adolphus Frankenberg.
Raising and registering the measurements of wine, spirits and other fluids by means of the self-registering fluid engine.	2732	17th Oct. 1870	Matthias Smith. George Frederick Waldener. Arthur Carey Lee.
Furnaces for boiling "worts" or other liquors	2842	28th Oct. 1870	James Rennie. Thomas Halliday.
Apparatus for cooling and refrigerating liquids, manufacturing ice and obtaining ammoniacal solution for the same and other purposes. (*cooling water in breweries.*)	2891	2nd Nov. 1870	Rees Reece.
An improved process for extracting the useful substance of hops and for manufacturing a pure and concentrated extract of hops. (*Communicated by Charles Augustus Seely.*)	2943	8th Nov. 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BREWING, &c.—*continued.*			
Manufacture of alkalized isinglass sulphited and bisulphited. (*for clarifying ale, beer, &c.*) (*Communicated by Baylis Child.*)	2969	11th Nov. 1870	Edward Herring.
Purifying beer - - - - -	3076	24th Nov. 1870	William Thomas Read.
Cooling or freezing machines - - - (*cooling wort.*) (*Communicated by Eugene Dominique Nicolle and Thomas Sutcliffe Mort.*)	3210	6th Dec. 1870	William Mort.
Treatment of beer, ale and other liquids in order to fine and preserve them. - - - -	3264	13th Dec. 1870	Alexander William Gillman. Samuel Spencer.
BRICKS, TILES AND BUILDING-BLOCKS.			
Improvements in dressing stone and in the machinery or apparatus employed therefor. (*for building.*)	518	22nd Feb. 1870	William Adams.
Kilns or ovens for burning or baking bricks, tiles or other articles of plastic material and lime.	545	24th Feb. 1870	James Edmonston Core.
Machinery for moulding bricks, tiles and other like articles.	644	4th March 1870	James Alexander Matthews.
Improved steam boilers and furnaces utilising the lost heat of lime, cement, brick, or other circular or other kilns.	670	7th March 1870	Pierre Joseph Robine.
Improvements in enamelling stone and articles composed of burnt clay and in the enamel to be employed therein. (*bricks, tiles, &c.*)	712	10th March 1870	Thomas West Walker.
Stoves for drying bricks and other articles in pottery.	735	12th March 1870	James Dunnachie.
Machinery or apparatus for compressing, forming and extracting moisture from peat, clay and other materials. (*moulds for bricks.*) (*Communicated by Thomas Ellis and William Alonzo Ellis.*)	896	26th March 1870	John Henry Johnson.
Construction of kilns - - - (*for burning bricks.*)	983	4th April 1870	James Wood Baker. George Worsnop. John Grainge.
Bricks and other building blocks - -	1065	12th April 1870	Thomas Turner.
Improvements in roofing tiles and in the method of locking or fastening them together when being formed into a roof, and in the ridging for tiled roofs, and in the apparatus used in the manufacture of such tiles, fastenings and ridges, and also of articles used for similar purposes, and for bricks. - - - -	1173	22nd April 1870	Joseph Armytage Wade. John Cherry.
Improvements in kilns or ovens and in apparatus employed therewith, chiefly designed for drying and burning bricks, tiles and ceramic ware.	1190	23rd April 1870	Augustus Morand.
Manufacture of mortar and concrete and of bricks or blocks for building purposes.	1205	26th April 1870	Henry Young Darracott Scott.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BRICKS, &c.—*continued.*			
Machinery or apparatus for tilling, ploughing, harrowing, digging and cultivating land. (*for brickmakers use.*)	1263	3rd May 1870	Henry Belmont.
Brick-making machines - - -	1272	3rd May 1870	George Wright.
Hardening, preserving and facing stone, chalk, brick and other building materials - -	1494	24th May 1870	Henry Cockburn Milne Ximenes. Edward Betincourt.
Machinery for pressing bricks, tiles and other articles made of clay or other plastic substances.	1612	3rd June 1870	Charles Henry Murray.
Improvements in bins and granaries or holders for corn and grain and in bricks for building the same and other structures. (*Communicated by Emile Pavy.*)	1946	12th July 1870	Henry Eugene Parry.
Machines for moulding and pressing bricks - (*Communicated by Benjamin Magee Gard and Emery Ross Gard.*)	1962	12th July 1870	William Robert Lake.
Brick-making machinery - - -	2002	15th July 1870	Richard Scholefield.
Apparatus to be employed in the preparation of pulverized clay used in the manufacture of tiles, bricks, pottery and other articles of earthenware or china.	2005	15th July 1870	Arthur Maw.
Ventilating houses and buildings, ships and railway and other carriages, and increasing or decreasing the temperature thereof. (*making ventilating roofing tiles.*)	2042	20th July 1870	William Haggett.
Improved means for drying substances impregnated with moisture. (*bricks.*)	2045	20th July 1870	Thomas Meredith Hopkins.
A new or improved apparatus or tile for forming wine bins or receptacles for wine or other bottles.	2165	3rd Aug. 1870	George Henry Pierce.
Improvements in the preparation of clay and in the machinery or apparatus for shaping and moulding vegetable and other plastic substances, also for making bricks, tiles, crucibles and other similar articles.	2389	2nd Sept. 1870	William Carter Stafford Percy.
Manufacture of metal plates employed for flat printing and other analogous purposes. (*production of printed tiles.*)	2524	20th Sept. 1870	Michael Daintry Hollins.
Preparation and use of peat or turf, and bituminous, resinous and ligneous substances, as fuel, and for other purposes. (*tile-like product.*)	2831	27th Oct. 1870	Jacob Geoghegan Willans.
An improved silicious compound applicable for the manufacture of pipes, tiles, bricks and other articles for buildings, also for paths, floors, roofs and other analogous purposes. (*Communicated by William Augustus Battersby, Timothy Reed Crawford and Robert Brown.*)	2863	31st Oct. 1870	William Edward Newton.
Improvements in puddling furnaces and in the preparation and application of certain materials for building and fettling the same. (*making bricks.*)	2913	4th Nov. 1870	Frederick Francis Jones.
Apparatus for drying and heating, amalgamating, moulding and compressing, more especially applicable to the manufacture of preserved coal. (*fire bricks and building bricks.*)	2941	8th Nov. 1870	Henry Walker Wood.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BRICKS, &c.,—*continued.*			
Apparatus for moulding or shaping clay and other plastic materials for the production of bricks, tiles and other articles.	3251	12th Dec. 1870	George William Hick.
Application of concrete to structures and foundations for the same, also to coffer dams. (*forming hollow blocks.*)	3039	21st Nov. 1870	James William Butler.
Machinery for making bricks or tiles - -	3142	30th Nov. 1870	William Buck. William Watkin.
BRIDGES, VIADUCTS AND AQUEDUCTS,			
Suspension tramways or roads - - - (*or bridges.*)	4	1st Jan. 1870	Richard Albert Moll.
Improvements in pipes, gutters, troughing and other apparatus for irrigating and manuring land, and in girders and framing for supporting the said apparatus and for other purposes. (*girders for bridges.*)	503	21st Feb. 1870	Edwin Maw.
Construction of ships and other vessels - - (*applicable to floating bridges or ferrys.*)	674	7th March 1870	Frederic Wilkins.
An improved method of and apparatus for executing submarine constructions. (*Communicated by François Durand.*)	688	8th March 1870	William Robert Lake.
Improvements in the manufacture of bars, plates and sheets of steel, or steel and iron combined, and in the process of welding employed in such manufacture. (*for building bridges.*) (*Communicated by John Absterdam.*)	856	23rd March 1870	William Robert Lake.
Method of constructing piers, breakwaters, wharfs, coffer dams, river and sea walls and other works in water.	1296	6th May 1870	Edwin Clark.
Locking screw bolts and nuts - - (*on girders.*)	1328	10th May 1870	Henry Johnson. Robert John Lecky.
Improvements in machinery and in the means employed in connection therewith for raising sunken ships and other submerged bodies, and for conducting other submarine operations. (*bridging or arching.*)	1680	10th June 1870	Joseph Thomas Parlour.
A continuous self-wedging fencing - - (*bar iron for bridge work.*)	1970	12th July 1870	Richard Long.
Girders to be used in bridges, subways, viaducts, railway works, and every description of building and other structures.	2393	2nd Sept. 1870	Constantine Henderson.
Improvements in caissons and bridges, to bridge across the entrances to graving docks, harbours, rivers or estuaries.	2444	9th Sept. 1870	Walter Robert Kinipple.
Wood paving with or without rails - - (*for bridges.*) (*Communicated by Samuel Norris.*)	2509	17th Sept. 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BRIDGES, &c.—*continued.*			
Apparatus for shoreing or strutting earthworks, tunnels, shafts, buildings and other structures.	2709	14th Oct. 1870	Giardinelli Spooner Kirkman.
Construction of bridges - - - - - (*Communicated by Charles Shaler Smith, Charles Hazlehurst Latrobe and Frederick Henry Smith.*)	2765	20th Oct. 1870	John Henry Johnson.
An improved camp-bed which may be used for several various useful purposes. (*or portable pontoon.*)	2851	29th Oct. 1870	Auguste Lafage.
Improvements in the construction of bridges, viaducts, roof and floorings, and in apparatus for the purpose.	2855	31st Oct. 1870	Julius Roberts.
Improvements in rivets and in rivetting metal plates together. (*in bridge building.*)	2984	14th Nov. 1870	William Ord.
Application of concrete to structures and foundations for the same, also to cofferdams. (*bridges.*)	3039	21st Nov. 1870	James William Butler.
BRUSHES AND BROOMS; SWEEPING CARPETS AND FLOORS.			
An improvement in brushes applied to drills for sowing all kinds of corn and seed. - -	567	25th Feb. 1870	Charles Dening. Samuel Henry Dening.
A new and improved method of fixing bristles, hair, bass, fibres and materials of like natures in the head, stock, socket or handle of a brush, broom or article of similar construction.	624	3rd March 1870	James Linfoot.
An improved machine for sweeping carpets and other floor coverings and floors by the action of an atmospheric current. (*Communicated by Arthur John Hapgood.*)	676	7th March 1870	William Robert Lake.
Knife-cleaning machines - - - - (*making the cleaning brushes.*)	824	19th March 1870	George Weedon.
A new or improved mode of manufacturing brushes	852	23rd March 1870	William Thurston Culmer.
An improved brushing machine for cleaning tin plates.	1320	9th May 1870	John Isaac Evans.
Paint brushes - - - - - (*Communicated by James Joseph Loverre.*)	1726	16th June 1870	William Edward Newton.
Machinery or apparatus for reducing wood, metal or other hard material to fixed patterns. (*broom handles.*) (*Communicated by Frederick Baldwin.*)	1967	14th July 1870	Giovanni Sconcia.
Construction and manufacture of brushes for tube cleaning and other similar purposes. - -	2808	25th Oct. 1870	William Henry Edwards. Alfred Edwards.
Apparatus for cleaning and scouring - -	3007	17th Nov. 1870	Alexander Cuthell.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BRUSHES, &c.—*continued.*			
Improvements in brushes and in machinery for manufacturing the same. (*Communicated by Oscar Densmore Woodbury, Edwin Channing Woodbury, John Jay Sibley and Hiram Cornelius Covert.*)	3065	23rd Nov. 1870	Alfred Vincent Newton.
An improved method in the manufacture of brushes and brooms.	3145	30th Nov. 1870	John George Horsey.
Brushes and brooms - - -	3393	30th Dec. 1870	Louis Charles Lumley.
BUILDING, PLASTERING, FLOORING AND ROOFING; WALLS, CEILINGS AND CORNICES; LADDERS AND BUILDING-STAGES.			
Improvements in the construction of concrete buildings and in apparatus employed for this purpose.	9	1st Jan. 1870	Charles Drake.
An improved mode of roofing buildings - -	85	11th Jan. 1870	Robert Doyne Dwyer.
Ornamenting surfaces - - - -	137	17th Jan. 1870	Frederick Samuel Lines.
Safes and strong rooms - - - -	162	19th Jan. 1870	William Mawe.
An improved vehicle or composition to be mixed with white lead and other pigments in lieu of linseed or boiled oil, turps and dryers to form paint. (*for houses and public buildings.*)	164	19th Jan. 1870	John Axtell Deacon Cox.
Mode of constructing ladders - - -	173	20th Jan. 1870	George Henry Ellis.
An improved portable scaffolding - - -	252	28th Jan. 1870	Bartolammeo Conci.
Improvements in the production of photographic pictures or designs on veneers and solid wood, and in the application thereof to cabinet work, furniture, fancy wood articles and other decorative purposes. - - - - - (*to house panelling, walls, &c.*)	383	9th Feb. 1870	Arthur Foley. Henry Foley.
Improved mode and means for preventing dampness and saltpetre.	442	15th Feb. 1870	Henry Dupland.
Improvements in pipes, gutters, troughing and other apparatus for irrigating and manuring land, and in girders and framing for supporting the said apparatus, and for other purposes. (*girders for buildings.*)	503	21st Feb. 1870	Edwin Maw.
An improved military tent - - - - (*Communicated by Ferdinand Waldejo.*)	578	26th Feb. 1870	Alexis Godillot.
Ladders - - - - - -	621	3rd March 1870	George Henry Ellis.
Construction of houses and other buildings or structures.	633	3rd March 1870	Frederick Walton.
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation and preserving wood and other materials. (*for polishing wainscot, panels, &c.*)	966	4th April 1870	Achille Thomas Anquetil.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BUILDING, &c.—*continued.*			
Ornamenting wood, leather and other materials for the manufacture of fancy boxes, furniture, panellings and for other ornamental purposes.	1058	11th April 1870	Archibald Brown.
Structures for the preservation of fruits, vegetables, meats and other perishable articles. (*Communicated by Nathan Hellings.*)	1070	12th April 1870	John Henry Johnson.
Construction of partitions or walls - -	1106	14th April 1870	Charles Beard.
Production of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials. (*for covering panels.*)	1159	20th April 1870	George William Ley.
Improvements in roofing tiles, and in the method of locking or fastening them together when being formed into a roof, and in the ridging for tiled roofs, and in the apparatus used in the manufacture of such tiles, fastenings and ridges, and also of articles used for similar purposes and for bricks. - - - - - -	1173	22nd April 1870	Joseph Armytage Wade. John Cherry.
Mode of securing ridges of slate or other material to the roofs of buildings. - - -	1174	22nd April 1870	George Whiteus Cooke. Henry Kennedy.
Machinery or apparatus for tilling, ploughing, harrowing, digging and cultivating land. (*for builders' use.*)	1268	3rd May 1870	Henry Belmont.
Safes, chests, bank vaults and other like structures (*Communicated by Theodore Hyatt.*)	1289	5th May 1870	John Henry Johnson.
Locking screw bolts and nuts - - - (*on girders.*)	1328	10th May 1870	Henry Johnson. Robert John Lecky.
Glazed structures for horticultural purposes - (*roofs for balconies, &c.*)	1349	11th May 1870	William Edgcumbe Rendle.
Manufacture and application of a composition or compositions for preserving the surfaces of walls, metals, wood and other materials.	1379	14th May 1870	Prosper Pimont.
Warming and ventilating horticultural buildings and other structures. (*construction of the buildings.*)	1382	14th May 1870	Henry Ormson.
Improvements in the manufacture of welded iron or steel tubes, and in the means or apparatus employed in such manufacture. (*for balconies.*)	1435	18th May 1870	Edward Peyton.
A new and improved mode of manufacturing wooden floors and wainscots. (*Communicated by Edouard Maitre.*)	1482	23rd May 1870	Henri Adrien Bonneville.
Improved means of protecting shop fronts, windows, doors and other parts of buildings or structures. (*strong rooms.*)	1648	7th June 1870	Frederick Schäfer.
A new or improved machine for washing and cleansing floors and other surfaces.	1672	9th June 1870	William Kay.
Construction of roofs and sides of houses and other structures.	1718	15th June 1870	William Jeffrey Hopkins.
Sunshades, tents, tent pegs and weather protectors	1802	24th June 1870	George Ritchie.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BUILDING, &c.—*continued.*			
Construction and arrangement of stages made of iron or other similar material, applicable to wind mills or other buildings or erections or structures.	1812	25th June 1870	Beau Lambert.
Improvements in the manufacture of artificial stone and in articles composed thereof. (*flooring, steps and roofing ridge stones.*)	1822	27th June 1870	William Bennet Adamson.
Improvements in the construction and arrangement of horticultural and other buildings or erections or structures, and in the means and appliances for heating the same.	1870	1st July 1870	William Port Ayres.
Construction of spiral staircases - - -	1910	6th July 1870	Louis Le Chevalier Cottam.
Building of iron-work walls - - -	1916	7th July 1870	François Joseph Liger.
Improvements in bins and granaries or holders for corn and grain, and in bricks for building the same and other structures. (*Communicated by Emile Pavy.*)	1946	9th July 1870	Henry Eugene Pavy.
An improved waterproof fabric, applicable for rugs, carpets, tents and outer coverings or wrappers.	1950	9th July 1870	Donald Nicoll.
Buildings applicable to orchards or other horticultural purposes. (*see* "HORTICULTURE.")	1961	12th July 1870	Alfred Gilbey.
Improved mechanism for locking or securely connecting the doors of safes, strong rooms and other like depositories to the frames thereof.	2132	29th July 1870	Henry Royall Minns.
Thatch-making machinery - - - (*for roofing ladder.*)	2219	10th Aug. 1870	Osborne Reynolds.
Constructing cylindrical or columnar piers or foundations.	2255	13th Aug. 1870	John Milroy.
Girders to be used in bridges, subways, viaducts, railway works, and every description of building and other structures.	2393	2nd Sept. 1870	Constantine Henderson.
Improvements in or applicable to machinery or apparatus for cutting wood to any required pattern or design. (*slaters' laths, &c.*)	2671	8th Oct. 1870	William Ellis.
Mode of training hops, the sockets for the poles or posts of same and other posts, applicable also for the boring for water. (*hitching posts for booths.*) (*Communicated by Eduardo Blythe.*)	2705	13th Oct. 1870	David Munroe Childs.
Apparatus for shoreing or strutting earthworks, tunnels, shafts, buildings and other structures.	2709	14th Oct. 1870	Giardinelli Spooner Kirkman.
Construction of illuminating and ventilating roofs and gratings or plates, parts of which are applicable to ordinary footways and carriage ways. (*Communicated by Theodore Hyatt.*)	2755	20th Oct. 1870	John Henry Johnson.
Preparation and use of peat or turf, and bituminous, resinous and ligneous substances, as fuel and for other purposes. (*for roof covers.*)	2831	27th Oct. 1870	Jacob Geoghegan Williams.
An improved camp-bed, which may be used for several various useful purposes. (*sentry box or tent.*)	2851	29th Oct. 1870	Auguste Lafarge.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BUILDING, &c.—*continued.*			
Improvements in the construction of bridges, viaducts, roofs and floorings, and in apparatus for the purpose.	2855	31st Oct. 1870	Julius Roberts.
An improved silicious compound applicable for the manufacture of pipes, tiles, bricks and other articles for buildings, and for paths, floors, roofs, and other analogous purposes. (*Communicated by William Augustus Battersley, Timothy Reed Crawford and Robert Brown.*)	2863	31st Oct. 1870	William Edward Newton.
Improvements applicable to safes, vaults and other structures for containing valuable property, and in alarm apparatus or telegraphs connected therewith. (*Communicated by Edwin Holmes and Henry Clay Roome.*)	2876	1st Nov. 1870	William Edward Newton.
Roofs for building - - - - -	2920	5th Nov. 1870	Walter Morgan.
An improved metallic composition for roofing, linings, pipes and other purposes. (*Communicated by David Johnson Millard.*)	2935	7th Nov. 1870	William Edward Newton.
Tents - - - - - - -	2989	15th Nov. 1870	James Stewart Smith.
Safes or receptacles designed to serve as coal boxes, as show cases for shops, and for other like purposes. (*pantry or store room fixture.*) (*Communicated by Benjamin Richard Deacon.*)	3016	17th Nov. 1870	George Haseltine.
Improvements in the manufacture of corrugated and embossed glass, and in the application of the same to the purposes of illumination. (*Communicated by Theodore Hyatt.*)	3112	28th Nov. 1870	John Henry Johnson.
Construction of ladders for general purposes, also applicable as a fire escape. - - - -	3132	30th Nov. 1870	Charles Martin. George Owen Mew.
Manufacture of longitudinally-corrugated beams or rails of steel or iron for railways and architectural and other purposes.	3144	30th Nov. 1870	Richard Montgomery.
Illuminating gratings for roads, streets, and other ways, and for floors and roofs generally. (*Communicated by Theodore Hyatt.*)	3195	5th Dec. 1870	John Henry Johnson.
Metallic bars or clips to be used for roofing and glazing purposes.	3216	7th Dec. 1870	Thomas Alfred Bickley.
Magazines, reservoirs or receptacles for storing gunpowder, cartridges and other explosive materials.	3256	13th Dec. 1870	William Palliser.
A new cloak for military and other purposes which can also be used as a sheet or covering. (*or tent.*)	3372	24th Dec. 1870	Alexander Carlyle Bell.
Formation of concrete works - - - (*houses and public buildings.*)	3398	30th Dec. 1870	Philip Brannon.

For ventilating buildings *see* "VENTILATION."
For warming buildings *see* "HEATING."
For lighting buildings *see* "LAMPS."

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Buoys, Marine Lights; Preserving Life and Property at Sea, Conveying Lines to Stranded Vessels; Swimming, Imparting Buoyancy.			
Producing heat and light. - - - - (*light for lighthouses.*)	228	25th Jan. 1870	Cromwell Fleetwood Varley. Theodore Anthony Rochussen.
Application of inextinguishable signal lights for marine and other purposes. (*or forming parts of the buoys, floating lights, &c.*) (*Partly communicated by Ferdinand Silas.*)	301	2nd Feb. 1870	Nathaniel John Holmes.
Life buoys - - - - - -	345	7th Feb. 1870	John Tyndale Greenfield.
Diving dresses - - - - -	638	4th March 1870	Henry Siebe. William Augustus Gorman. Thomas Forster.
Construction of ships and other vessels - - (*applicable to floating light stations.*)	674	7th March 1870	Frederic Wilkins.
Apparatus to be used in subaqueous operations.	1407	16th May 1870	Thomas Page.
Apparatus for the production of gases for lighting and heating purposes. (*illuminating lighthouses and beacons.*) (*Communicated by Xavier Moussard.*)	1456	19th May 1870	Alexander Melville Clark.
Apparatus for saving property and transmitting messages in cases of disaster at sea. - -	1470	21st May 1870	Julius Arnoldus. Ryke Van Den Bergh.
Candles - - - - - - (*for lighthouses.*) (*Communicated by Francois Alfred Chatel.*)	1831	27th June 1870	William Robert Lake.
A new or improved suit or dress and fittings for saving life in water.	2510	17th Sept. 1870	John Benjamin Stoner.
A new or improved floating lighthouse and telegraph and life-boat station. (*floating refuge.*)	2625	3rd Oct. 1870	John Benjamin Stoner.
Apparatus for saving life and property at sea -	2685	11th Oct. 1870	Thomas George Tolson.
An improved buoyant mattress designed to serve either as a bed or a life preserver. (*Communicated by Joshua Hunt.*)	2924	5th Nov. 1870	William Robert Lake.
Improved life preserving clothing - - (*Communicated by Clark Spencer Merriman.*)	3214	2nd Dec. 1870	Alexander Melville Clark.
For life-boats *see* "Ship-building."			

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BUTTONS, BUCKLES, STUDS, SLEEVE-LINKS AND OTHER DRESS FASTENINGS.			
Machinery for manufacturing mother-of-pearl, ivory, bone or other hard buttons.	25	4th Jan. 1870	Eugène Cyprien Marie.
Improvements on buttons and clasps for linen and other garments, likewise applicable for the fixture of any article of toilette to human apparel.	186	21st Jan. 1870	Jules Reichel.
An improved button or fastening for ruffles and other articles.	339	5th Feb. 1870	Leopold Meyer.
Construction of fasteners for securing together the ends, bands or parts of made-up scarves, neck-ties, belts, sashes or other articles of wearing apparel to which such fastenings are applicable.	342	5th Feb. 1870	George Tyler.
An improved chain suspender and fastener, which invention is also applicable for attaching brooches, studs, clasps, links, buttons and other articles of jewellery or other ornaments to the dress of the user.	348	7th Feb. 1870	Henry Garner Pendleton.
Buttons, studs and other such like fastenings -	532	23rd Feb. 1870	Thomas Henry Leaker.
Fastenings for gloves and other articles - -	628	3rd March 1870	James Wheeler.
An improved buckle or fastening - - (*see* "HARNESS.")	768	15th March 1870	John Beckett. Richard Levers.
Improvements in the manufacture of plait and in fastenings therefor, which improvements are applicable for jewellery and other purposes. (*for studs, solitaires, &c.*)	952	31st March 1870	Robert Atkin.
Studs or buttons - - - - - (*Communicated by John Braxton Carter and William Dudley Knowles.*)	1135	19th April 1870	Benjamin Joseph Barnard Mills.
Buckles or fastenings for braces, belts, bands and other articles.	1194	25th April 1870	Edward Lawley Parker.
An improved button for certain purposes -	1231	29th April 1870	Thomas Empson.
An improved spring fastening for securing purses, pocket-books, cigar cases, and similar articles, and for other like purposes. (*buckle or clasp for articles of dress.*) (*Communicated by Mathurin Bronard.*)	1244	30th April 1870	William Robert Lake.
Collar and shirt studs and other studs for fastening articles of dress. - - - -	1655	8th June 1870	Edwin Green. Joel Cadbury.
Ornamenting of fastenings for braces, belts and bands and other like articles. (*buckles.*)	1725	16th June 1870	John Henry Brierley.
Manufacture of certain ornamental and useful articles, such as buttons, studs or other attachments for dress, knobs for doors and drawers, chair nails, harness mounts, and for various other purposes analogous to these. - - -	1902	5th July 1870	John William Hoffman. Frederic Arthur Harrison.
Buckles for fastening dress belts and other like articles. (*Communicated by Marc André Baudet.*)	1943	8th July 1870	William Robert Lake.
Buttons - - - - (*Communicated by Joseph Hampson.*)	2148	2nd Aug. 1870	Thomas Evans.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
BUTTONS, &c.—*continued.*			
Improvements in metallic eyelets and in shanks to buttons.	2181	5th Aug. 1870	Thomas Calver. Edward Hines.
An improved alloy or metal (*for buttons.*) (*Communicated by James C. Booth.*)	2382	1st Sept. 1870	Campbell Morfit.
An improved fastening for garments and other articles or purposes. (*Communicated by Joseph Edward Dallon.*)	2477	14th Sept. 1870	William Edward Newton.
Brace buckles	2850	29th Oct. 1870	James Tyrer.
Buttons (*Communicated by George J. Capewell, Clark M. Platt, and Samuel M. Porter.*)	3188	3rd Dec. 1870	George Haseltine.
Manufacture of covered buttons	3359	23rd Dec. 1870	Robert Watts. John Shakespeare Manton.
CALCULATING; EDUCATIONAL AND SCHOOL APPARATUS AND DIAGRAMS.			
An improved machine or apparatus for effecting calculations applicable to weights, measures, time and money.	323	4th Feb. 1870	John Sellers.
Construction and manufacture of school furniture and other similar articles.	1400	16th May 1870	John Henry Banks.
Improvements in parlour foot-balls and other india-rubber articles, which improvements relate partly to illustrating the surfaces of such articles and partly to inflating the same. (*and for imparting geography, &c.*)	1505	24th May 1870	Thomas Jefferson Mayall.
An improved apparatus for illustrating the motions of some of the heavenly bodies and explaining various celestial phenomena.	1573	30th May 1870	Henry Bryant.
Counting registers applicable to counting the revolutions of shafts in various kinds of machinery, steam and other engine indicators, for registering stroke or travel indicators, for gas or water meters, clocks, adding machines and registering devices of different kinds, or for various purposes. (*Communicated by William Henry McNary.*)	1988	14th July 1870	William Edward Newton.
Weighing machines involving means for counting, registering, printing, adding and other operations connected with weighing scales.	2456	10th Sept. 1870	Henry Fairbanks.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CANDLES, TAPERS AND WICKS.			
Improvements in the manufacture of candles and in apparatus to be employed therein.	835	21st March 1870	Jesse Ascough.
Machinery for making dip candles - -	890	26th March 1870	Joseph Watson. Charles Watson. George Watson.
The application of a new material to the production of illuminating oils and solid hydrocarbons, suitable for the manufacture of candles and for other purposes. - - - - -	961	2nd April 1870	Frederick Field. Gustav Siemssen.
Candles - - - (*Communicated by François Alfred Chatel.*)	1831	27th June 1870	William Robert Lake.
Improvements in the manufacture of candles and in machinery or apparatus employed for that purpose. - - - -	2078	23rd July 1870	Edward Cowles. Peter Brash.
Candles - - - - -	2513	19th Sept. 1870	John Kingsford Field.
An improved candle - - - -	2680	10th Oct. 1870	James Richard Greaves.
An improved apparatus for dipping candles -	3193	5th Dec. 1870	Samuel Mallory.
Improvements in the manufacture of candles and in apparatus to be employed therein. (*and wicks.*)	3288	15th Dec. 1870	Jesse Ascough.
Improvements in the manufacture of candles and in machinery or apparatus employed for that purpose.	3397	30th Dec. 1870	Arthur Field.
CARDS, TABLETS AND CARD-CASES.			
Improved means of preventing impersonation - (*by photographed portraits on cards.*)	385	9th Feb. 1870	Charles Baylis.
Playing cards - - - - -	414	11th Feb. 1870	Robert Chanony.
Production of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials. (*for covering card cases.*)	1159	20th April 1870	George William Ley.
Cases or receptacles for needles, pins, matches, pens, cards, stamps, photographs, cotton and other similar articles.	1473	21st May 1870	William Avery.
Ornamenting the edges and margins of books and paper. (*cards.*)	1587	31st May 1870	John Leighton, sen.
Manufacture of show tablets - - -	2143	1st Aug. 1870	William Brownlie.
An improved process for marking railway and other tickets, trade-mark labels, commercial cards or similar printed forms.	2375	30th Aug. 1870	William Thomas Guyatt.
An improved method of producing divers coloured letters, figures or other characters upon a card, ticket, label, placard or other like article, or upon any suitable surface for advertising or similar purposes.	2687	11th Oct. 1870	Charles John Letts.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CARRIAGES, CABS, OMNIBUSES, WAGGONS, CARTS, TRUCKS, VELOCIPEDES, LOADING AND TIPPING CARTS, &c.			
A new and improved vehicle to be propelled by manual power. (*Communicated by Jean Louis Charton-Joanot.*)	10	3rd Jan. 1870	William Edward Gedge.
Apparatus connected with bicycles or two-wheeled velocipedes.	22	3rd Jan. 1870	Charles Wyndham.
Method of and apparatus for fastening and unfastening the doors of railway carriages.	49	6th Jan. 1870	John Michels.
A new and improved system of constructing railroads with jaunting cars and posts and railways.	88	12th Jan. 1870	Henry Temple Humphreys.
Improvements in tramways and in vehicles to be run thereon. (*Communicated by William Judson Addis.*)	90	12th Jan. 1870	Benjamin Joseph Barnard Mills.
Improved apparatus for coupling railway carriages	152	18th Jan. 1870	James Mackenzie.
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion. (*grab links for coupling railway carriages.*)	175	20th Jan. 1870	James Maze Kilner.
An improved appliance for facilitating the working of bicycles and tricycles.	209	22nd Jan. 1870	Archibald Samuels Campbell.
Improvements in ornamenting woven and felted fabrics and in apparatus employed therein. (*for coach and carriage linings.*)	210	22nd Jan. 1870	John William Eyres. John Longbottom.
Construction of four-wheeled carriages - -	255	28th Jan. 1870	John Edward Standfield.
An improved method of adjusting the bodies and shafts or poles of vehicles to suit the height of the animals employed to draw them.	343	7th Feb. 1870	George Tooley Tietjen.
Bicycles - - - - -	361	8th Feb. 1870	Samuel Webb Thomas, M.A.
Velocipedes - - - - -	363	8th Feb. 1870	Arthur Field. Edwin Badger.
Improvements in railways and in rolling stock to be used therewith.	388	10th Feb. 1870	Henry Temple Humphreys.
Mode of reducing the friction of pivots turning on oscillating levers, which system is also applicable to wheeled vehicles, especially waggons or railway trucks.	391	10th Feb. 1870	Gilbert Eguillon.
Apparatus or appliances for transporting heavy objects from one locality to another.	406	11th Feb. 1870	Alexander Burton Brown.
Spring seats and bed bottoms - - - (*carriage seats.*) (*Communicated by John Lorenzo Whipple.*)	407	11th Feb. 1870	William Robert Lake.
Improvements in locomotion and in the apparatus to be employed therein.	446	15th Feb. 1870	Bewicke Blackburn.
Improved safety apparatus for locomotives and brake wagons.	454	16th Feb. 1870	Laurence Hill.
Velocipedes - - - - -	473	17th Feb. 1870	Rudolph Duerre.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CARRIAGES, &c.—*continued.*			
Improvements in pipes, gutters, troughing and other apparatus for irrigating and manuring land, and in girders and framing for supporting the said apparatus, and for other purposes. (*carriage frames.*)	503	21st Feb. 1870	Edwin Maw.
Railways, tramways, common roads, and machines and vehicles to run thereon.	512	22nd Feb. 1870	William Bridges Adams.
Apparatus for connecting and disconnecting railway carriages and trucks.	522	23rd Feb. 1870	William Crombleholme.
Springs for carriages and other purposes - - (*Communicated by Andrew Jackson Dexter.*)	523	23rd Feb. 1870	William Edward Newton.
Improvements in omnibuses and in connecting the same with road steamers or traction engines.	573	26th Feb. 1870	Robert William Thomson.
Railway carriages - - - - -	613	2nd March 1870	James Harman.
Attaching lamps to carriages - - -	617	2nd March 1870	James Neale. Joseph Beverley Fenby.
Couplings for railway carriages - - -	622	3rd March 1870	James Broadley.
Improvements in the application of power for the propulsion of vehicles on common roads or railroads and in apparatus connected therewith. (*constructing waggons or trucks.*) (*Communicated by Henri Adolphe Corbin.*)	664	5th March 1870	Alexander Melville Clark.
Bicycles - - - - - - -	690	8th March 1870	Charles Wyndham.
Improvements in the rolling stock of railways and tramways, also partly applicable to ordinary vehicles.	707	10th March 1870	John William Grover.
Apparatus for raising and lowering heavy bodies - (*trains of railway carriages.*)	747	14th March 1870	William Arkell.
Velocipedes - - - - - -	754	15th March 1870	Gavin Brown.
Hand trucks - - - - - -	756	16th March 1870	Robert Saunders Prowse. Henry Duke.
Construction of railway and other waggons -	782	15th March 1870	Julius Homan.
The application of cork for preventing loss of heat by radiation, and also for protecting bodies against heat. (*encasing carriages.*)	791	17th March 1870	Germond de Lavigne.
Apparatus for securing the doors of railway carriages and preventing the opening of the same while the train is in motion.	826	19th March 1870	Charles James Hislop Warden.
Improvements in locomotion and in the means to be employed therein. (*carriages.*) (*Communicated by Nicolas Joly.*)	847	22nd March 1870	John Henry Johnson.
Velocipedes - - - - - -	859	23rd March 1870	John Henry Miles.
Improvements in locks, latches or bolts for fastening the doors of railway carriages, which improvements are also applicable to other purposes.	877	25th March 1870	William Rogers Thomson.
Improved means of fastening and securing the doors of railway carriages and other doors.	879	25th March 1870	Robert Frederick Muller Harcourt.
An improved weighing cart or carriage for ascertaining the weight of coal, wood, or other wares.	884	25th March 1870	Clovis Jean.
Means or arrangements for the safety and convenience of railway passengers. (*bolting the carriage doors.*)	963	2nd April 1870	Joseph Chrimes.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CARRIAGES, &c.—*continued.*			
Improvements in velocipedes, parts of which improvements are applicable to machinery generally	979	2nd April 1870	Alfred Milnes Hobson. Edward Cozens Smith.
Construction of carriages, vehicles and velocipedes	1039	8th April 1870	André Etienne.
Carriage windows	1087	13th April 1870	John Philipson.
Velocipedes (*Communicated by Charles Dopping Irvine.*)	1094	14th April 1870	Joseph Plaskitt.
Improvements in the construction of omnibuses and in apparatus for indicating the number of passengers entering therein.	1116	16th April 1870	Thomas Wood.
Steam carriages for common road locomotion (*Communicated by Jean Baptiste Gabriel Marie Fréderic Piret.*)	1273	3rd May 1870	Alexander Melville Clark.
Improved apparatus for regulating the lift of railway and other carriage windows.	1284	5th May 1870	George Ingram.
Apparatus for facilitating travelling on foot	1344	11th May 1870	Thomas Jonathan Guy.
An improved steam machine for agricultural work and land transport of every kind. (*or carriage or omnibus.*) (*Communicated by Jean Baptiste Honore Petitpierre.*)	1365	13th May 1870	William Edward Gedge.
An improved apparatus to be employed in the filling of water carts with water.	1392	16th May 1870	Charles Wicksteed, junior.
Construction of vehicles used on railways, tramways or common roads.	1432	18th May 1870	Walter Brodie.
Improvements in the construction of tramways and in engines and carriages employed thereon.	1475	21st May 1870	Edward Ellis Allen.
Furniture springs for seats, mattresses and other similar articles. (*car and carriage seats.*) (*Communicated by John Perlle Ryan.*)	1604	2nd June 1870	William Edward Newton.
Facilitating the mounting a horse or velocipede, or bicycle or other vehicle.	1618	4th June 1870	Charles Kenney.
Velocipedes	1623	4th June 1870	Samuel Adams.
Improved apparatus or machinery for lifting, lowering, loading and unloading hay, corn, straw and other materials.	1666	9th June 1870	William Twaites Wright. Evan Yorath.
Construction and arrangement of carriages or other vehicles.	1683	11th June 1870	William Bush.
Improvements in the means or apparatus employed for retaining the windows of railway or other carriages or other windows when raised or lowered in any desired position.	1714	15th June 1870	Michael Jacob.
Improvements in railways and in the engines and carriages to run thereon. (*Communicated by François Maurice Marin.*)	1771	21st June 1870	John Henry Johnson.
Apparatus for lowering weights (*lowering waggons.*)	1803	24th June 1870	Thomas Wrightson.
Velocipedes	1813	25th June 1870	Emile Viarengo de Forvill-
Steam-engines (*three-wheeled velocimanes or velocipedes.*)	1818	27th June 1870	Vincent Rastonin.
Apparatus for effecting the delivery of mail bags and parcels to railway trains in motion. (*Communicated by William McCabe and Francis Wayland Glen.*)	1854	29th June 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CARRIAGES, &c.—*continued.*			
Velocipedes	1862	30th June 1870	Henry Hodgkinson.
Construction of carriages	1891	4th July 1870	Charles Quick. Edwin Napoleon Norminton.
New or improved means of facilitating and effecting the traction of wheel carriages drawn by horse power.	1898	5th July 1870	Ernest Leslie Macdonell.
Improvements in soldiers' litters and in trucks or ambulances connected therewith. (*Communicated by Dr. Carl Heinrich Rudolf Stanelli.*)	1908	6th July 1870	Alexander Prince.
Improvements in portable or moveable railways, and in the adaptation of the same to various constructions of wheeled carriages.	1948	9th July 1870	Edmund Leahy.
Improving latches, locks, bolts, fastenings in general, but more especially the fastenings of doors, and particularly the fastenings of railway carriage doors.	1986	14th July 1870	James William Ayres.
Improvements in repairing worn or damaged rails of permanent way, and in the combination and arrangement of machinery or apparatus employed therein. (*lorry and rail carriage.*)	2009	15th July 1870	Hugh Baines.
An improved spring-fastener for railway carriage and other windows.	2043	20th July 1870	John Edward Makins.
Door fastenings (*for carriages.*)	2054	20th July 1870	David Jones.
Combining or coupling locomotives and other railway rolling stock.	2077	23rd July 1870	Henry Dubs. Sampson George Goodall-Copestake.
Improvements in the construction of railway buffer and draw springs, and in bearing springs for railway carriages, and in the use of the same for carriages for common roads, such springs being adapted to other purposes.	2144	1st Aug. 1870	Edward Otto. Newton Wilson.
Velocipedes	2155	2nd Aug. 1870	George Friedrich Greiner. Jacob Friedrich Hiller.
"Landaus" and other carriages	2164	3rd Aug. 1870	Henry Edward Brown.
Certain improvements in combined funeral or composite carriages.	2178	4th Aug. 1870	John Edward Ridges.
Apparatus or appliances for raising, lowering and transporting objects. (*Communicated by Nicolaus Wonlarlarsky.*)	2183	5th Aug. 1870	Charles Denton Abel.
Improvements in carriages for running on circular railways, and in the means or method of propelling the same.	2222	10th Aug. 1870	Abraham Waddington.
Improvements in the construction of wheels applicable chiefly to velocipedes, and in the driving gear of such vehicles.	2236	11th Aug. 1870	James Starley. William Hillman.
Improved couplings for railway carriages and vehicles.	2244	12th Aug. 1870	Peter Brimelow.
Locks for railway and other carriages	2249	12th Aug. 1870	John Matthias Hart.
Certain improvements in fastenings for doors	2251	12th Aug. 1870	Philip Waters.
Velocipedes	2270	16th Aug. 1870	James Pain.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CARRIAGES, &c.—*continued.*			
An improved construction of mud cart and water cart combined.	2328	24th Aug. 1870	William Berry.
Improved means or apparatus for enabling tramway and other omnibusses or vehicles to run upon and leave tramrails at any point.	2357	27th Aug. 1870	George Gore. James Meacock.
An improved alloy or metal *(for coach furniture.)* *(Communicated by James C. Booth.)*	2382	1st Sept. 1870	Campbell Morfit.
Attaching lamps to carriages	2405	3rd Sept. 1870	James Neale. Joseph Beverley Fenby.
Locking gear of the fore carriage of wheel vehicles	2436	8th Sept. 1870	Loftus Perkins.
Improved mechanical arrangements for raising and lowering or opening and closing the heads of carriages and vehicles.	2579	28th Sept. 1870	Alexander McKenzie.
Carriage windows	2599	30th Sept. 1870	John Philipson.
Machinery and apparatus for transporting passengers, goods and other articles. *(connecting and disconnecting the trucks.)* *(Communicated by Myles Cooper.)*	2624	3rd Oct. 1870	Leonard Cooper.
Improvements in the construction of perambulators, which improvements are also applicable to other carriages.	2716	14th Oct. 1870	William Blanchflower Gedge.
A pole chain connector and disconnector for vehicles and harness and similar purposes.	2780	21st Oct. 1870	Daniel Whale.
An improved expanding and contracting canopy applicable to omnibuses, furniture vans and other uses.	2792	24th Oct. 1870	Joseph Ellisdon.
Improved means of and apparatus for preventing the entrance of flies and other insects and reptiles into rooms or apartments of buildings, ships and carriages. *(wire blinds in lieu of glass in carriages, howdahs, &c.)*	2822	27th Oct. 1870	Sarah Beauchamp Bush.
Springs for railway carriages *(Communicated by Richard Vase.)*	2829	27th Oct. 1870	William Robert Lake.
Improvements in street railway carriages and in permanent way for street and other railways.	2849	29th Oct. 1870	John Coope Haddan.
An improved means or apparatus for raising and lowering windows, particularly applicable to railway and other carriage windows.	2896	3rd Nov. 1870	John Jones. Howard Busby Fox.
Improved mechanical arrangements for coupling and uncoupling railway locomotives, carriages, trucks and vehicles.	2945	8th Nov. 1870	James Bradley.
Manufacture of street and carriage indicators	2955	10th Nov. 1870	William Higgins, jun.
An improved steam machine for agricultural work and land transport of every kind. *(forming a carriage or omnibus.)* *(Communicated by Jean Baptiste Honoré Petitpierre.)*	2964	4th Nov. 1870	William Edward Gedge.
An improvement in constructing railway carriages and other road vehicles to insure further ease and safety in travelling.	2973	12th Nov. 1870	Joseph Chrimes.
Velocipede carriages and vehicles	3077	24th Nov. 1870	Sidney Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CARRIAGES, &c.—*continued.*			
Couplings for railway carriages - - (*Communicated by Richard Campion, James W. Thomson, junr., John H. Michener and Samuel L. Ward.*)	3120	28th Nov. 1870	William Robert Lake.
Machinery for drilling or boring rocks and other mineral substances in mining, tunnelling, quarrying and other like operations. (*frame and carriage on wheels to run on railways.*)	3131	29th Nov. 1870	Fenner Ballou Taylor.
An improved apparatus for instantly detaching railway carriages from the engine while the train is in motion.	3164	2nd Dec. 1870	Joseph Robert McVoy.
An improved crank-action applicable to velocipedes	3207	6th Dec. 1870	Josiah Turner.
An entire new system for constructing permanent way with improved method of constructing and working rolling stock in connection therewith.	3230	9th Dec. 1870	Edmund Beatty Lockyer.
Improvements in carriages and waggons, and relating especially to carriages and waggons to be drawn in trains on common roads by traction engines. - - - -	3263	13th Dec. 1870	David Greig. James Gozney.
Springs chiefly designed for railway and other carriages. (*Communicated by Patrick Sarsfield Devlan, Isaac Pennington Wendell and Stephen Paschall Morris Tasker.*)	3290	15th Dec. 1870	William Robert Lake.
Apparatus for coupling and disconnecting railway carriages and trucks.	3311	19th Dec. 1870	Frederick Hawley.
Improvements in locks and fastenings, especially applicable for railway carriage and other doors.	3356	22nd Dec. 1870	James Morrison.
A new system of railway adapted for the traffic of crowded streets of cities or towns or other places of carriages for such railway, and means for propelling and stopping the same, part of which is applicable to the ordinary railway system.	3386	28th Dec. 1870	William Robertson.
An improved construction of fastening for doors - (*carriage doors.*)	3403	31st Dec. 1870	James William Ayres.
Improvements in the manufacture of felted fabrics, and in the machinery or apparatus employed therein. (*for carriage linings.*) (*Communicated by Robert Spencer.*)	3404	31st Dec. 1870	William Edward Newton.
See also "AXLES." *See also* "BREAKS." *See also* "WHEELS FOR CARRIAGES." For ventilating carriages, *see* "VENTILATION." For warming carriages, *see* "HEATING." For lighting carriages, *see* "LAMPS." For registers and turnstiles, *see* "MEASURING PROGRESS."			

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CARTRIDGES AND CASES.			
An improved cartridge case for breech-loading fire-arms.	45	5th Jan. 1870	Adonis Nicolas Cristin Gavard.
Breech-loading arms and cartridges - -	116	13th Jan. 1870	Thomas Restell.
Breech-loading fire-arms and cartridges - -	144	18th Jan. 1870	Westley Richards.
Improvements in breech-loading fire-arms, and in the manufacture of cartridges for the same.	353	7th Feb. 1870	John Hanson.
Improvements in cartridges for central-fire breech-loading fire-arms, and in percussion caps of the said cartridges.	453	16th Feb. 1870	John Abraham.
An improved holder for cartridges - - (*Communicated by Monsieur Pierre Marie Fouque.*)	739	12th March 1870	Achille du Bled. Paul Chenaillier. Jean Auffret.
Cartridges for breech-loading fire-arms - - (*Communicated by B. B. Hotchkiss.*)	1143	19th April 1870	William Robert Lake.
Breech-loading fire-arms and cartridges therefor -	1283	4th May 1870	Bethel Burton.
Cartridges for ordnance - - - -	1448	19th May 1870	George Wightwick Rendel.
Improvements in military and sporting guns, and also in cartridges applicable to the same or other descriptions of breech-loading arms.	1635	6th June 1870	Thomas Restall.
Cartridges - - - - - (*Communicated by Chas. Felix de Dartein and Jules Edouard de Dartein.*)	1652	8th June 1870	Henry Woodcroft Hammond.
Cartridge cases for breech-loading fire-arms - (*Communicated by Nathaniel Gilbert Whitmore and Alfred Augustus Reed, junior.*)	1658	8th June 1870	William Edward Newton.
Improvements in breech-loading fire-arms and in cartridges for the same. (*Communicated by Charles Edward Sneider.*)	1829	27th June 1870	William Robert Lake.
Metallic cartridges for fire-arms - - (*Communicated by Francis Draper.*)	2286	18th Aug. 1870	William Robert Lake.
Fixed ammunition for fire-arms and tools for the manufacture of the same. (*cartridge cases.*)	2611	1st Oct. 1870	Timothy James Powers.
Construction of cartridges for chassepôts and other similar rifles. (*Communicated by Pierre Marie Fouque.*)	2893	2nd Nov. 1870	Pierre Combaluzier.
Breech-loading fire-arms and cartridges - - (*Communicated by Paul Ganidel.*)	2907	3rd Nov. 1870	Alexander Melville Clark
Metallic cartridge cases - - - (*Communicated by General Hiram Berdan.*)	3019	18th Nov. 1870	George Coburn Wilson.
Improvements in the construction of ordnance and in the mode of propelling projectiles, and also in the cartridges and ammunition used for that purpose.	3130	29th Nov. 1870	Henry Bessemer.
An improved construction of cartridge box - (*Communicated by Henry D. Cooke, junior.*)	3215	7th Dec. 1870	Alfred Vincent Newton.
Magazines, reservoirs or receptacles for storing gunpowder, cartridges and other explosive materials.	3256	13th Dec. 1870	William Palliser.
A new or improved blank cartridge - -	3257	13th Dec. 1870	Alexander Henry.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CARTRIDGES, &c.—*continued.*			
Cartridges - - - - - -	3373	24th Dec. 1870	John Loader.
Improvements in breech-loading fire-arms, and in cartridges for the same. (*Communicated by Charles Edward Sneider.*)	3376	24th Dec. 1870	William Robert Lake.
CASKS AND BARRELS; CASK-STANDS; BUNGS, TILTING CASKS.			
Improvements in stoppers for jars, carboys, bottles, casks and other vessels, and in the manufacture of such articles to which the stoppers may be applied.	135	17th Jan. 1870	Thomas Welton.
Manufacturing barrels and other round vessels of wood. (*Communicated by Daniel Howard Waters.*)	834	21st March 1870	Alfred Vincent Newton.
Improvements in metal bushes for the bung holes of casks, and in the mode of and apparatus for securing the same therein.	857	23rd March 1870	John Moore.
Manufacture of metal bushes for casks or barrels -	902	28th March 1870	William Gray. Thomas Biggin.
A new or improved apparatus applicable to barrels, casks, or vessels for the preservation of fermented liquors. (*see* "BREWING.")	939	31st March 1870	Antonio Batalha Reis.
Machines for shaping staves for casks and barrels - (*Communicated by Albert Taubert.*)	1083	13th April 1870	William Spence.
An improved apparatus combining the functions of a bung and of a self-acting vent peg.	1160	21st April 1870	Romain Francois Bigot.
Improvements in the manufacture and in the securing of tubes, taps and plugs in boilers and other vessels, also in certain modes of regulating and stopping the flow of liquids, gases or air into or from such vessels. (*form of cask heads.*)	1180	22nd April 1870	Charles Lungley.
Arrangement of pipes for drawing liquids from casks and other vessels.	1213	27th April 1870	Francis Joseph Ortner.
An improved compound or preparation to be applied to the inside of casks and other vessels.	1275	4th May 1870	Colin Paget Matthews.
An improved automatic barrel-filling apparatus - (*Communicated by Seth Clinton Catlin.*)	1429	18th May 1870	William Edward Newton.
A new or improved bleaching agent, also applicable for other purposes, together with the mode of and apparatus for producing the same. (*applicable for sulphuration of casks.*)	1770	21st June 1870	Daniel Collet.
Machinery or apparatus for reducing wood, metal or other hard material to fixed patterns. (*vent pegs.*) (*Communicated by Frederick Baldwin.*)	1987	14th July 1870	Giovanni Sconcia.
Mechanical arrangements for drawing off liquids from beer, casks, barrels and other vessels.	2238	12th Aug. 1870	William James.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CASKS, &c.—*continued.*			
Stoppers for bottles, jars, casks and other vessels, and tubes and implements connected therewith.	2370	30th Aug. 1870	Francis Coombes.
Machinery or apparatus for tilting barrels - -	2432	8th Sept. 1870	William Clough. Tom Child.
Packages or receptacles for sulphuric acid - - (*lining casks.*)	2715	14th Oct. 1870	Richard Holden Davis.
An improved apparatus combining the functions of a bung and of a self-acting vent-peg. (*Communicated by Romain Francois Bigot.*)	2751	19th Oct. 1870	William Edward Gedge.
An improved method of tapping barrels, casks and other vessels in which taps or cocks are used to draw off the liquid contents thereof. - - -	2918	4th Nov. 1870	Charles William Meiter. Thomas William Smith.
An improved metallic composition for roofing, linings, pipes and other purposes. (*lining casks.*) (*Communicated by David Johnson Millard.*)	2935	7th Nov. 1870	William Edward Newton.
An improved means of rendering casks and other vessels air and water tight.	2967	15th Nov. 1870	John Somervell.
Constructing portable folding furniture and self-tilting and folding cask stands.	3161	2nd Dec. 1870	John Coppard.
CASTING AND MOULDING METALS; MANUFACTURE OF CASTINGS.			
Treatment of cast iron for the production of castings therefrom. (*Communicated by Nicholas John Poutiloff.*)	72	10th Jan. 1870	Charles Denton Abel.
Improvements in obtaining oil from carbonaceous substances, in utilising the bye-products and residues, and in making manure and moulders blackening.	108	13th Jan. 1870	James Greenshields.
Improvements in the manufacture of shot and in apparatus employed therein.	134	15th Jan. 1870	Gerhard Lampen.
Improvements in the manufacture of lead-encased tin pipes, and in apparatus employed in such manufacture.	147	18th Jan. 1870	Hiram Haines.
Improvements in or connected with the moulding or casting of metals, and in the apparatus to be employed therein. - - - - -	602	1st March 1870	William Mushet. Robert Mushet.
Apparatus for moulding flanged and socket pipes and columns. - - - - -	654	5th March 1870	Enoch Openshaw Taylor. George Field.
Improvements in the manufacture of hollow cast-iron cooking utensils, and in the means or apparatus employed therefor or connected therewith, part of which apparatus is applicable to the moulding of other articles.	696	9th March 1870	John Neilson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CASTING, &c.—*continued.*			
Improvements in or connected with the manufacture of "blackening" for foundry purposes, and in the means or apparatus employed therefor.	757	15th March 1870	Frederick Pattison.
Apparatus for running or pouring metals, and for moulding and forming the same.	809	18th March 1870	James Murdoch Napier.
Mantel register stoves and register stoves - -	893	26th March 1870	James Clifford Morgan. Henry Macaulay. Francis William Waide.
Forming holes in iron castings - - -	995	5th April 1870	John Pickering.
Apparatus for skimming cast iron during the process of casting.	1028	7th April 1870	Thomas Robinson.
A new or improved metal founders' blacking -	1090	13th April 1870	Frederick Pattison.
Casting mould boards - - -	1391	14th May 1870	Richard Hickman Murray.
Improvements in machinery for corrugating and moulding sheet metal, which improvements are also applicable for other purposes. (*see* "MOULDINGS.") (*Communicated by Asa Johnson and William Thornton Still.*)	1566	28th May 1870	Alexander Melville Clark.
Ladles for molten metals - - -	1669	9th June 1870	Francis William Webb.
Improvements in fire-arms and ordnance and in rifled projectiles, and machinery for the manufacture of the same. (*moulding and ramming machine for projectiles.*)	1745	17th June 1870	Sir Joseph Whitworth.
Machinery or apparatus for moulding for casting -	1860	30th June 1870	George Little.
Improvements in the manufacture of iron tubes, and in machinery employed therein, applicable also to the manufacture of tubes of other metals.	1980	13th July 1870	Henry Kesterton.
Manufacture of railway wheels; also in the moulds and the converting furnaces to be used in the manufacture of railway wheels. (*Communicated by John Blake Tarr.*)	2102	26th July 1870	Alfred Vincent Newton.
Production of cast-iron pipes, columns and other similar castings.	2242	12th Aug. 1870	William Oliver Johnston.
Machinery for manufacturing type - - (*Communicated by William Wallace Dunn.*)	2427	7th Sept. 1870	George Haseltine.
Improvements applicable to letter-press printing machines, and in the production of stereotypes to be used therewith. (*casting stereotype plates.*)	2514	19th Sept. 1870	Edmund Squire Norcombe.
Manufacture of metal plates employed for flat printing and other analogous purposes.	2524	20th Sept. 1870	Michael Daintry Hollins.
An improved type casting, breaking, rubbing and setting machine.	2527	20th Sept. 1870	John Alfred Thomas Overend.
Metal founders' blacking - - -	2609	1st Oct. 1870	John Carrington Sellars.
Improved moulding apparatus for cast-iron ingots and other castings.	2819	27th Oct. 1870	John Westray.
Improvements in making moulds for casting and in apparatus therefor.	2977	12th Nov. 1870	John Page.
An improved method of and apparatus for compressing metals in a liquid condition. (*Communicated by Constantine Michael Ocooneff.*)	3001	16th Nov. 1870	George Haseltine.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CASTING, &c.—*continued.*			
Improvements in the manufacture of iron and steel and castings of the same, and in apparatus employed therefor. (*Communicated by John Ware Middleton.*)	3087	24th Nov. 1870	George Haseltine.
Manufacture of longitudinally-corrugated beams or rails of steel or iron for railways, and for architectural and other purposes. (*casting the ingots.*)	3144	30th Nov. 1870	Richard Montgomery.
CASTING AND MOULDING PLASTIC MATERIALS; MANUFACTURE OF MOULDED ARTICLES; PLASTIC COMPOSITIONS; MOULDING FUEL.			
Apparatus for moulding and compressing substances for artificial fuel.	154	19th Jan. 1870	Thomas Patterson Balls.
Treatment or preparation of various natural substances so as to render them applicable for use in journal boxes and other parts of machinery or other articles whose surfaces are intended to be subjected to friction. (*pounded wood, ivory, bones, &c.*) (*Communicated by Stuart Gwynn.*)	190	21st Jan. 1870	William Edward Newton.
Manufacture of artificial fuel - - -	456	16th Feb. 1870	James Bannehr. Henry Matthews.
Machinery for moulding bricks, tiles and other like articles.	644	4th March 1870	James Alexander Matthews.
Certain improvements in elastic rolls or tubing for clothes wringers and various other purposes, as well as in machinery for manufacturing the same.	786	16th March 1870	Joel Moulton.
Production of compounds containing xyloidine - (*for moulding.*)	787	16th March 1870	Daniel Spill.
Manufacture of fire lighters - - -	788	17th March 1870	George Buck.
Improvements in moulds used in stereotyping, and in apparatus for producing the same. (*forming paper moulds by pressure.*) (*Communicated by Hippolyte Auguste Marinoni.*)	797	17th March 1870	Alexander Melville Clark.
An improved sieve for gas purifiers and scrubbers (*forming perforated plates from plastic material.*)	836	21st March 1870	George Skey. Thomas Proud.
Machinery or apparatus for compressing, forming and extracting moisture from peat, clay and other materials. (*Communicated by Thomas Ellis and William Alonzo Ellis.*)	896	26th March 1870	John Henry Johnson.
Improvements in the production of artificial fuel, and in apparatus to be employed for such purpose. (*moulding or blocking.*) (*Communicated by the Anthracite Fuel Manufacturing Company (Incorporated).*)	928	30th March 1870	John Henry Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CASTING PLASTIC, &c.—*continued.*			
Filters - - - - - - (*a plastic composition for moulding.*) (*Communicated by Frederick C. Krause.*)	1082	13th April 1870	Charles Joseph.
Wheels for carriages, wagons, carts and other vehicles. (*of vulcanite pressed and moulded.*)	1095	14th April 1870	Laurence Stewart.
Apparatus for shaping plastic materials - -	1126	18th April 1870	William Fullarton Murray. Thomas Duncan McFarlane.
A new or improved hardening composition, and its employment with india-rubber, gums and oils. (*Communicated by John Ballou Newbrough.*)	1155	20th April 1870	John Henry Johnson.
Production of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials. (*moulding by pressure.*)	1159	20th April 1870	George William Ley.
Manufacture of bearings, slides and packings for steam-engines and other machinery. (*Communicated by Eliza Dexter Murfey.*)	1401	16th May 1870	John Henry Johnson.
Retorts and retort settings - - -	1410	17th May 1870	Charles Hunt.
Improvements in apparatus for moulding and stamping soap and for other similar purposes, part of such improvements being also applicable to charging and discharging apparatus used in various other manufacturing operations.	1418	17th May 1870	Frederick John Cleaver.
Improvements in the manufacture of soles and heels for boots and shoes, and in apparatus employed in such manufacture. - - (*leather pressed, moulded and filled with plastic material.*) (*Communicated by Laurent Hurtault.*)	1588	31st May 1870	William John Barron. Edmund Charles Barron.
An improvement in the manufacture of lasts for the feet. (*moulding.*)	1615	4th June 1870	William Henry Taplin.
Improvements in the manufacture of clay or earthenware pipes and in the mechanism employed therefor.	1715	15th June 1870	Robert Miller.
Gas-burners - - - - - (*from a porous substance, burnt clay, &c.*) (*Communicated by Frederick Charles Krause.*)	1733	17th June 1870	Charles Joseph.
Manufacture of mosaic plaques or slabs suitable for external and internal decorations.	1744	17th June 1870	Colin Minton Campbell.
Improvements in the manufacture of artificial stone and in articles composed thereof. (*by moulding.*)	1822	27th June 1870	William Bennet Adamson.
Manufacture of pots or crucibles used in glass furnaces. (*moulding the pot.*) (*Communicated by Hugo Stimpfl and Johann Stenger.*)	1926	7th July 1870	Carl Holste.
Machinery for moulding clay and other plastic materials into drain pipes and other articles. (*Communicated by Philip Syng Justice.*)	2000	15th July 1870	Henry Woodcroft Hammond.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CASTING PLASTIC, &c.—*continued.*			
An improved method of manufacturing solid collodion, and moulding the same into articles of any desired form. (*Communicated by Isaiah S. Hyatt and John W. Hyatt, junior.*)	2101	26th July 1870	William Robert Lake.
Improvements in the preparation of clay and in the machinery or apparatus for shaping and moulding vegetable and other plastic substances, also for making bricks, tiles, crucibles and other similar articles.	2389	2nd Sept. 1870	William Carter Stafford Percy.
Manufacture of casting blocks and printing blocks used for heliographic and other printing. (*casting blocks of casine, china clay.*)	2464	13th Sept. 1870	George Baldock. Thomas George Denne. August Hentschel.
Apparatus for the manufacture of compounds of collodion. (*producing flexible materials.*)	2649	6th Oct. 1870	William Thomas Henley. Daniel Spill, junior.
Manufacture of tobacco pipes	2661	7th Oct. 1870	Josiah Glode Stapelton.
Apparatus for shaping plastic materials	2724	15th Oct. 1870	William Fullarton Murray. Thomas Duncan McFarland.
Improvements in the manufacture of "pebble" gunpowder, and in means or apparatus for the same. (*moulding, making mould plates.*)	2816	26th Oct. 1870	Frederick Burney.
Pencil cases (*from moulded clay or cement.*)	2825	27th Oct. 1870	William Riddle.
Preparation and use of peat or turf, and bituminous, resinous and ligneous substances, as fuel, and for other purposes. (*plastic compound moulded articles.*)	2831	27th Oct. 1870	Jacob Geoghegan Willans.
An improved silicious compound applicable for the manufacture of pipes, tiles, bricks and other articles for buildings and for paths, floors, roofs and other analogous purposes. (*Communicated by William Augustus Battersley, Timothy Reed Crawford and Robert Brown.*)	2863	31st Oct. 1870	William Edward Newton.
Improvements in boxes and bearings for axles and other shafts, and in compositions to be applied thereto. (*pasty mass for lining axle boxes.*) (*Communicated by Eliza Dexter Murfey.*)	2879	1st Nov. 1870	John Henry Johnson.
Apparatus for drying and heating, amalgamating, moulding and compressing, more especially applicable to the manufacture of preserved coal.	2941	8th Nov. 1870	Henry Walker Wood.
Apparatus for the manufacture of articles of pressed glass.	2960	10th Nov. 1870	Thomas George Webb.
Application of concrete to structures and foundations for the same, also to coffer dams. (*moulding hollow blocks.*)	3039	21st Nov. 1870	James William Butler.
An improved method of and apparatus for expelling volatile matters from peat. (*and clay.*)	3067	22nd Nov. 1870	Thomas George Walker.
Improvements in the manufacture of corrugated and embossed glass, and in the application of the same to the purposes of illumination. (*Communicated by Theodore Hyatt.*)	3112	28th Nov. 1870	John Henry Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CASTING PLASTIC, &c.—*continued.*			
Improved means and apparatus for utilizing small pieces of leather in the manufacture of boots and shoes. (*moulding scraps.*)	3235	9th Dec. 1870	John Blakey.
Apparatus for moulding or shaping clay and other plastic materials for the production of bricks, tiles and other articles. (*moulding fuel.*)	3251	12th Dec. 1870	George William Hick.
Treating certain mineral lubricating oils and paraffin. (*obtaining paraffine wax.*)	3261	13th Dec. 1870	Joseph James Coleman.
See also "BOTTLES." *See also* "BRICKS." *See also* "EARTHENWARE." For moulding sugar, *see* "SUGAR."			
CEMENT AND PLASTER; BURNING LIME.			
Manufacture of Portland cement	99	12th Jan. 1870	William Goreham. Leedham White.
Manufacture of non-conducting material for preventing the radiation of heat. (*composition of carbon, clay, &c.*)	531	23rd Feb. 1870	Charles Henry Aston.
Kilns or ovens for burning or baking bricks, tiles or other articles of plastic material and lime.	545	24th Feb. 1870	James Edmonston Core.
Improved steam boilers and furnaces, utilising the lost heat of lime, cement, brick or other circular or other kilns.	670	7th March 1870	Pierre Joseph Robini.
Limekilns and similar kilns	767	15th March 1870	Peter William Spencer.
Limekilns (*Communicated by Pierre Jacques Gerbault-Guichard.*)	808	18th March 1870	Henry Edward Newton.
An improved varnish paint (*or mineral concrete.*)	901	28th March 1870	James Sampson. Richard Rowlands Minton.
Construction of kilns (*for burning lime.*)	983	4th April 1870	James Wood Baker. George Worsnop. John Grainge.
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation, and preserving wood and other materials. (*obtaining a base for stuccoes.*)	986	4th April 1870	Achille Thomas-Anquetil.
An improved method of preparing or treating cements for the purpose of rendering them applicable for the production of artificial stone and architectural ornaments. (*Communicated by Robert Parish Busk.*)	996	5th April 1870	Charles James Busk.
An improved mode of manufacturing cement	1204	26th April 1870	Henry Young Darracott Scott.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CEMENT, &c.—*continued.*			
Manufacture of mortar and concrete and of bricks or blocks for building purposes.	1205	26th April 1870	Henry Young Darracott Scott.
Apparatus for breaking and crushing stones for use in macadamizing roads, for railway ballast, for employment in the manufactures of béton, of French concretion or mortar, and for producing sand or gravel of various degrees of coarseness. (*Communicated by Claude Leon Desmolins.*)	1239	30th April 1870	Arthur Charles Henderson.
Safes, chests, bank vaults and other like structures (*fireproof cement.*) (*Communicated by Theodore Hyatt.*)	1289	5th May 1870	John Henry Johnson.
Manufacture and application of a composition or compositions for preserving the surfaces of walls, metals, wood and other materials.	1379	14th May 1870	Prosper Pimont.
Hardening, preserving and facing stone, chalk, brick and other building materials. - -	1494	24th May 1870	Henry Cockburn Milne Ximenes. Edward Betincourt.
Piles for engineering purposes - - - (*filling with concrete or cement.*) (*Communicated by Thomas W. H. Moseley and Frederick Allen Leigh.*)	1498	24th May 1870	Evan Leigh.
Improvements in the manufacture of artificial stone and in articles composed thereof.	1822	27th June 1870	William Bennet Adamson.
Improvements in the construction and arrrangement of horticultural and other buildings or erections or structures, and in the means and appliances for heating the same. (*for uniting the glass.*)	1870	1st July 1870	William Port Ayres.
Manufacture of Portland cement - - -	1963	12th July 1870	William Goreham.
An improved method of incorporating metal and cement in the construction of tanks, boxes, vases or pots for horticultural and other purposes, water and other pipes and conduits, artificial ponds, reservoirs, basins and rivulets, embankments of watercourses and analogous works. (*Communicated by Joseph Monier.*)	1999	15th July 1870	William Edward Gedge.
Improved machinery or apparatus for mixing or compounding selenitic mortar, concrete and other cementitious substances or preparations. -	3028	18th Nov. 1870	Henry Young Darracott Scott. Gilbert Richard Redgrave.
Application of concrete to structures and foundations for the same, also to cofferdams.	3039	21st Nov. 1870	James William Butler.
Improvements in blast furnaces, and in the employment of the waste gases thereof. (*calcining limestone.*)	3327	20th Dec. 1870	James Hunter.
Manufacture of cement and mortar - - -	3346	21st Dec. 1870	Henry Young Darracott Scott.
Formation of concrete works - - - - (*cement and wire.*)	3398	30th Dec. 1870	Philip Brannon.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CEMENTED AND FLOCKED FABRICS; ADHERING ORNAMENTS AND DEPOSITING METAL ON FABRICS OR YARNS.			
Improvements in ornamenting woven and felted fabrics and in apparatus employed therein. (*adhering ground fibres or flock.*)	210	22nd Jan. 1870	John William Eyres. John Longbottom.
Ornamenting Scotch caps or bonnets (*producing patterns in bronze powder, &c.*)	264	28th Jan. 1870	William Orr.
Manufacture of muffs, ladies' collars, trimmings and other similar articles. (*eider down attached to a calico backing.*)	278	31st Jan. 1870	Joseph Clark.
Improvements in india-rubber manufactures and in tools or machinery employed therein. (*elastic webbing, cut fabric for rollers, &c.*)	295	1st Feb. 1870	George Broadhurst. John Swindells. John Kershaw.
Manufacture of elastic fabrics suitable for gussets	1369	13th May 1870	James Miller. James Miller, junior.
Manufacture of embossed fabrics in imitation of quilting, and applicable especially to the making of ornamental petticoats. (*cemented and pressed.*)	1567	28th May 1870	Robert John Collins.
Preparation of fibrous materials to render them suitable for use as lint for surgical purposes.	2454	10th Sept. 1870	Theophilus Westhorp.
An improved fabric suitable for carpet linings and other purposes, and improved machinery for manufacturing the same.	3218	7th Dec. 1870	William Henry Maitland.
CENTRIFUGAL MACHINES.			
Improvements in centrifugal machines, in the suspension and driving of the same, and a new or improved combination thereof with other apparatus.	2550	23rd Sept. 1870	David McColley Weston.
CHAINS; CHAIN CABLES; HOOKS, HOOPS, RINGS.			
Improvements in the manufacture of compound rivetted bands of iron, steel or other metal to be used as a substitute for wire ropes, and in the formation of pullies to be used therewith.	1	1st Jan. 1870	Charles Hodgson.
Wire ties for securing bales of cotton, hay or other material. (*Communicated by Edwin S. Lenox.*)	16	3rd Jan. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CHAINS, &c.—*continued.*			
Attachments to be used with chains, cords, bands and such like pliable articles, especially useful amongst other purposes for securing on the person trinkets and jewellery.	26	4th Jan. 1870	Townshend Griffin.
Improvements in combined hat and coat hooks and and in single hat and coat hooks or pegs.	169	19th Jan. 1870	Peter Currie.
Improvements in apparatus for the passage and control of cables and other chains and in apparatus for auxiliary propulsion.	175	20th Jan. 1870	James Maze Kilner.
Improvements in the manufacture of chains and chain cables and in machinery for the same. (*Communicated by Augustin Onésime David.*)	193	21st Jan. 1870	Alexander Melville Clark.
Imparting elasticity and strength to chain cables of ships or to any other description of chain.	198	22nd Jan. 1870	Francis Sleigh.
Hooks and the means for securing the same -	273	31st Jan. 1870	Arthur Paget.
An improved chain suspender and fastener, which invention is also applicable for attaching brooches, studs, clasps, links, buttons and articles of jewellery or other ornaments to the dress of the user.	348	7th Feb. 1870	Henry Garner Pendleton.
An improved method of constructing submarine telegraph cables for the support of insulated conductors for communicating intelligence between nations and foreign countries by electricity. (*flat chain for centre of cable.*)	409	11th Feb. 1870	James Story.
Improvements in the manufacture of wheel tires, hoops, bands and such like articles, and in the machinery or apparatus employed therein. (*Communicated by Hippolyte Ulysse Petin and Jean Marie Gaudet.*)	710	10th March 1870	John Henry Johnson.
Jacquard apparatus - - - - (*double-headed hooks.*)	740	14th March 1870	John Morris.
Swivels - - - - - (*for chains.*)	753	15th March 1870	Henry Manton. James Henry Mole.
An improvement in sewing machines - - (*flexible looping hook.*) (*Communicated by John Hadley Osborn.*)	758	15th March 1870	John Campbell McLagan.
Improvements in bale hoops and other bands, and in preparing, fitting and securing the ends thereof.	911	29th March 1870	William McNabb.
Improvements in the manufacture of plait and in fastenings therefor, which improvements are applicable for jewellery and other purposes. (*for rings, &c.*)	952	31st March 1870	Robert Atkin.
Buckles or bale ties - - - - (*Communicated by Eleazar Judson Beard.*)	1255	2nd May 1870	Alfred Vincent Newton.
Wire ties for securing bales of hay, cotton and other merchandize.	1464	20th May 1870	Daniel Cole Lowber.
Machinery or apparatus for testing strain or pressure applied to solid bodies and for other like purposes. (*cables.*) (*Communicated by Jules Auguste Desgoffe.*)	1649	7th June 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CHAINS, &c.—*continued.*			
Machinery for manufacturing wire ties for securing bales of hay, cotton and other merchandise.	1695	13th June 1870	Daniel Cole Lowber.
Improvements in the manufacture of tilt and forge hammer heads and in hursts and tail hoops.	1734	17th June 1870	Joseph Eaton Lee.
Locking and releasing hooks - - - - (*Communicated by John Bozorth and Henry Fredericks.*)	1944	8th July 1870	William Robert Lake.
Steam windlasses and apparatus for controlling and securing chain cables.	2104	26th July 1870	William Horatio Harfield.
An improved fastener or "tie" for metallic bands employed in securing bales or packages of cotton or other matters packed under pressure. (*Communicated by Edward Pugh Jones.*)	2273	17th Aug. 1870	Edward Arthur O'Brien.
Fastenings for the ends of the metallic hoops or bands used in baling cotton and other substances.	2604	30th Sept. 1870	Francis Watkins.
Certain improvements in the manufacture of ornamental metallic chains, and in certain appliances for producing the same. - - - -	2766	20th Oct. 1870	Walter Bancroft. John Wood.
Improved means or machinery for bending and forming tires or hoops for wheels of carts, waggons and carriages, or other similar purposes.	2777	21st Oct. 1870	George Taylor.
Machinery and apparatus for tilling land by steam, and for other purposes. (*endless kempen or wire rope or chain.*)	2904	3rd Nov. 1870	Samuel Oram.
Wire bands or fasteners for bales or parcels - (*Communicated by Edwin Sewall Lenox.*)	3260	13th Dec. 1870	Thomas James Smith.
Improvements in the manufacture of tilt and forge hammer heads, and in hursts and tail hoops.	3267	14th Dec. 1870	Joseph Eaton Lee.
CHARCOAL, COKE, CARBON, MOULDERS' BLACKING, LAMP-BLACK.			
Improvements in obtaining oil from carbonaceous substances, in utilising the bye-products and residues, and in making manure and moulder's blackening.	106	13th Jan. 1870	James Greenshields.
Preparation of animal charcoal for use in treating saccharine solutions.	203	22nd Jan. 1870	William Thurston Waite.
An improved method of extracting juices from plants, and of separating liquid or soluble matter from solids. (*washing charcoal.*) (*Partly communicated by Julius Robert.*)	219	24th Jan. 1870	Ferdinand Kohn.
An improved mode of and apparatus for revivifying animal charcoal. (*Communicated by Doctor Herrmann Eipfeldt and Camillo Thumb.*)	309	2nd Feb. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CHARCOAL, &c.—*continued.*			
Improvements in the manufacture of gas and in obtaining residual products from such manufacture, and in apparatus to be used in such manufacture. (*carbonising coal.*)	510	21st Feb. 1870	Frank Clarke Hills.
Manufacture of non-conducting material for preventing the radiation of heat. (*carbon and clay.*)	531	23rd Feb. 1870	Charles Henry Aston.
Improvements in or connected with the manufacture of "blackening" for foundry purposes, and in the means or apparatus employed therefor.	757	15th March 1870	Frederick Pattison.
Manufacture of peat charcoal - - -	919	29th March 1870	Jean Baptiste Passedoit. Louis Antoine Ritterbandt.
A new or improved metal founders' "blacking" - (*from charcoal of wood refuse.*)	1090	13th April 1870	Frederick Pattison.
Manufacture of coke and the apparatus connected therewith.	1149	20th April 1870	Jonathan Green.
Improvements in the manufacture of gas and coke, and in the apparatus to be employed in the same manufacture.	1285	5th May 1870	Joseph Bryan Hickmott.
Coking and desulphurising the coke after obtaining the gases, oils and other products from coal, and the machinery or apparatus employed therefor.	1495	24th May 1870	John Fletcher.
Manufacture of peat charcoal - - - (*Partly communicated by Jean Baptiste Passedoit.*)	1743	17th June 1870	Louis Antoine Ritterbandt.
Kilns employed in the manufacture and reburning of animal charcoal - - - - -	1935	8th July 1870	James Buchanan. Samuel Vickess.
Preparing charcoal for decolorising syrups and other solutions.	2049	20th July 1870	George Phillips.
Metal founders' "blacking" - - - -	2609	1st Oct. 1870	John Carrington Sellars.
Certain improvements in the mode of and apparatus for charring wood, peat, bones and other vegetable and animal matters.	2714	14th Oct. 1870	Frederick Ludewig Hahn Danchell.
An improved method of and apparatus for expelling volatile matters from peat. (*carbonising.*)	3057	22nd Nov. 1870	Thomas George Walker.
Machinery for excavating and preparing peat - (*for conversion into charcoal.*)	3268	14th Dec. 1870	Frederick Ludewig Hahn Danchell.
CHEQUES, CHECK BOOKS, BANK NOTES.			
Improved means of preventing impersonation - (*by photographed portraits on letters of credit, &c.*)	385	9th Feb. 1870	Charles Baylis.
Cheques, bills of exchange and other like documents for the purpose of preventing fraud.	509	21st Feb. 1870	John Richards.
Improved means for preventing fraudulent alterations in bankers' cheques and other monetary instruments. (*Communicated by John Bigley Newton.*)	1611	3rd June 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CHEQUES, &c.—*continued.*			
Improved means for preventing the fraudulent use of bonds, receipts, cheques, tickets and other like articles.	2126	29th July 1870	Thomas Rice Hayes. Charles Rolla Peters.
Improvements in engraved or ornamented blocks or plates, in the mode or method of producing the same, and in the apparatus or mechanism employed therein, which apparatus is also applicable to other useful purposes. (*for printing bonds, bank notes, cheques, certificates, &c.*) (*Communicated by Claus Van Haagen.*)	3366	24th Dec. 1870	John Henry Johnson.
CHLORINE AND CHLORIDES.			
Improvements in the manufacture and application of chlorine, and in apparatus employed therein.	668	7th March 1870	James Hargreaves. Thomas Robinson.
Improvements in obtaining and applying iron and manganese protoxides or their carbonates, in obtaining and applying baryta, strontia and salts thereof, in obtaining potash, soda and sulphur, and in utilising bye or "waste" products arising in the manufactures of chlorine, copper and alum.	881	25th March 1870	Joseph Townsend.
Manufacture of chlorine	1312	7th May 1870	Ludwig Mond. James Hargreaves.
Improvements in the manufacture of artificial alkaloids derived from coal tar, and in the preparation of salts of the said alkaloids. (*chlorhydrates.*)	1425	18th May 1870	John Casthelaz.
Production of sulphuric and hydrochloric acids of carbonates of potash and soda, and also of chlorine. (*Communicated by Haydn Mozart Baker.*)	2065	21st July 1870	John Henry Johnson.
Manufacture of manure (*producing chlorides of ammonium and potassium.*)	2425	7th Sept. 1870	Campbell Morfit.
Apparatus for the manufacture of chlorine	2469	13th Sept. 1870	Henry Deacon.
Manufacture of bleaching powder by the use of chlorine when diluted with inert gases.	2476	14th Sept. 1870	Henry Deacon.
Purifying beer (*employing chloride of aluminum.*)	3076	24th Nov. 1870	William Thomas Read.
Manufacture of chlorine	3093	25th Nov. 1870	Henry Larkin. William White.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CHURNS, MILK CANS, MAKING CHEESE AND BUTTER.			
Churns - - - - - -	121	14th Jan. 1870	William Sinton.
Mode of and apparatus for manufacturing cheese -	1185	23rd April 1870	Levi Chase Schermerhorn. Cornelius Schermerhorn.
Construction of pressing machines, applicable to pressing cheese and other articles.	1378	14th May 1870	Ralph Mellard.
An improved mode of and apparatus for preserving butter and other similar substances. (*Communicated by Messieurs Guichard and Son.*)	1458	19th May 1870	John Henry Johnson.
Washing, churning and mixing machinery -	1539	27th May 1870	John Ingham Taylor.
Improvements in producing rotary motion applicable to egg beaters, churns, bottle washers, washing-machines, drills, tools and other instruments. (*Communicated by M. W. Robinson.*)	1557	27th May 1870	William James Schlesinger.
Improvements in machinery or apparatus and vessels for feeding, dusting, stirring, mixing or kneading flour, and heating or boiling water or liquids for the manufacture of bread, biscuits, cakes, puddings, paste, buns, muffins, crumpits and other articles of food, which improvements are also applicable for beating and mixing, heating or boiling various ingredients or plastic substances, churning or other purposes.	1875	2nd July 1870	Ebenezer Stevens.
Improvements in machinery or apparatus for churning, which improvements are also applicable to other purposes.	1980	7th July 1870	David Gordon.
Construction of cheese-presses - -	3384	28th Dec. 1870	Henry Simpson.
CISTERNS, RESERVOIRS, TANKS AND BUCKETS.			
Improved means for conveying and storing vitriol (*in iron vessels.*)	97	12th Jan. 1870	William Henry Balmain. William Jones Menzies.
Machinery for breaking, heckling, streaking, and cleaning hemp, cleaning flax, tow, washing wool and heckling, cleaning or washing other fibrous materials. (*constructing the cleansing tanks.*)	280	31st Jan. 1870	Edward Brasier.
Adapting iron vessels for receiving and conveying sulphuric and other acid liquids.	445	15th Feb. 1870	Edward Andrew Parnell.
Construction of cisterns and tanks - -	666	7th March 1870	George Gregory Lowe.
The application of cork for preventing loss of heat by radiation, and also for protecting bodies against heat. (*casing reservoirs of hot water, cisterns, &c.*)	791	17th March 1870	Germond de Lavigne.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CISTERNS, &c.—*continued.*			
Compositions for coating ships' bottoms and other like purposes, also applicable to stone and other building materials. (*for coating iron tanks.*)	1096	14th April 1870	William Jesty.
Improvements in the manufacture of artificial stone, and in the manufacture of vessels for containing or conveying acids or acid vapours or heated air or gases.	1233	29th April 1870	Frederick Ransome.
Means for regulating the flow or controlling the supply of water or other fluids.	1486	23rd May 1870	Alfred Long.
Safety attachments for steam generators - - (*form of reservoir.*) (*Communicated by Hiram Kimball.*)	1549	27th May 1870	Benjamin Joseph Barnard Mills.
Improvements in the method or methods of supply and exit of water and other fluids respectively to and from aquariums, tanks, cisterns and other like vessels, and in the apparatus connected therewith.	1565	28th May 1870	William Thomas Small.
Water-waste preventers - - - - -	1686	11th June 1870	Francis George Fleury.
Improvements in the manufacture of artificial stone and in articles composed thereof. (*cisterns.*)	1822	27th June 1870	William Bennet Adamson.
Storing petroleum and other inflammable or explosive liquids. - - - - - -	1905	6th July 1870	George Burney. Charles Ingall.
Certain new and useful improvements in oil cabinets	1954	9th July 1870	Moses Hewey Wiley.
An improved method of incorporating metal and cement in the construction of tanks, boxes, vases or pots for horticultural and other purposes, water and other pipes and conduits, artificial ponds, reservoirs, basins and rivulets, embankments of watercourses and analogous works. (*Communicated by Joseph Monier.*)	1999	15th July 1870	William Edward Gedge.
Manufacture of ball valves for supplying water cisterns and tanks.	2041	20th July 1870	Henry Redfern.
Improvements in wet and dry closets, and in apparatus connected therewith. (*self-closing spring valve.*)	2460	12th Sept. 1870	Alfred Tylor.
Machinery and tools for pressing washers, bucket cars, box clips and similar articles out of sheet metals. - - - - - -	2563	24th Sept. 1870	George Price. George Arthur Price.
Improved arrangements for applying compressed air or other fluid to propel omnibuses or other vehicles on railways, tramways or common roads, and in part applicable otherwise. - (*safety reservoir.*)	2733	17th Oct. 1870	David Laidlaw. John Thomson.
Ore-washing machines - - - - - (*hopper-shaped cistern.*)	2859	31st Oct. 1870	Hesikiah Bradford.
Vessels and appliances connected therewith for carrying liquid cargoes in bulk. (*Communicated by William Gray Warden.*)	3067	23rd Nov. 1870	John Henry Johnson.
Improvements in the manufacture of deodorizing and disinfecting compounds, and in the treatment of sewage and impure waters, and in closets and apparatus for the treatment of sewage. (*settling tanks.*)	3167	2nd Dec. 1870	Fritz Hillè.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CISTERNS, &c.—*continued.*			
Cooling or freezing machines - - - - (*freezing cistern.*) (*Communicated by Eugene Dominique Nicolle and Thomas Sutcliffe Mort.*)	3210	6th Dec. 1870	William Mort.
Improvements in steam generators and in furnaces therefor. (*forming tanks in compartments.*) (*Communicated by S. Lloyd Wiegand.*)	3390	29th Dec. 1870	William Robert Lake.
CLOCKS, WATCHES AND OTHER TIME-KEEPERS; WATCH KEYS, CHAINS AND GUARDS.			
Certain new and useful improvements in the manufacture of watch cases, and in machinery for producing the same.	33	4th Jan. 1870	Charles Louis Thiery.
Improvements in dials for gas regulators and in dials in general, also in besils or rings for dial faces.	61	7th Jan. 1870	John Carnaby.
Double-faced watches - - - -	123	15th Jan. 1870	Alfred Courvoisier Jouais.
Construction of watches - - - -	133	20th Jan. 1870	Frederic Rötig.
Marine chronometers, watches and other time-keepers. - - - - - -	222	25th Jan. 1870	George Children Philcox. Thomas Saint.
Watches - - - - - - - (*Communicated by Louis Auguste Etienne-Guyott.*)	304	2nd Feb. 1870	Bristow Hunt.
An improved watch protector - - -	671	7th March 1870	John Brooks.
Clocks - - - - - - -	727	11th March 1870	Jesse Siddons. David Bowen Meese.
Certain improvements in watches and other time-keepers.	745	14th March 1870	Samuel Dunseith McKellen.
Swivels - - - - - - (*for watch guards, watch and locket chains, &c.*)	753	15th March 1870	Henry Manton. James Henry Mole.
Lever escapements for watches and other time-keepers.	905	28th March 1870	Adolphe Nicole.
Improvements in keys for watches and other pocket time-keepers, and in the time-keepers to which they are applied.	914	29th March 1870	John Alexander Lund.
Mechanism for diminishing friction - - - (*in clock work.*) (*Communicated by Jean Baptiste Léopold Favier-Lagaye and Ernest Auguste Verleye.*)	942	31st March 1870	William Robert Lake.
An improved illuminated night clock - - (*Communicated by Victor Atanas Pierret and Fritz Borel.*)	987	4th April 1870	William Robert Lake.
Apparatus for winding and setting watches and other time-keepers. - - - -	1032	8th April 1870	Alexander Watkins. Robert Cory Hanrott.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CLOCKS, &c.—*continued.*			
Production of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials. (*for clock cases.*)	1159	20th April 1870	George William Ley.
Universal dials for clocks and watches - -	1422	18th May 1870	Henry Van Laethem.
A new or improved self-acting indicator or machine for shewing the times of trains to arrive at and depart from railway stations, points and crossings for the better prevention of accidents, applicable also for other purposes. - - - (*dial plate with pointers.*)	1739	17th June 1870	William Ambler. Benjamin Jowett.
Counting registers applicable to counting the revolutions of shafts in various kinds of machinery, steam and other engine indicators for registering stroke or travel indicators for gas or water meters, clocks, adding machines and registering devices of different kinds or for various purposes. (*Communicated by William Henry McNary.*)	1988	14th July 1870	William Edward Newton.
Marine chronometers, watches, railway and other time-keepers. - - - -	2084	23rd July 1870	George Children Philcox. Thomas Saint.
Tell-tale clocks - - - -	2161	3rd Aug. 1870	Frederick Mantell Pratt.
Electric clockwork - - - - (*Communicated by Edouard Bonhomme and Charles Ferdinand Mildé.*)	2339	25th Aug. 1870	William Edward Newton.
Apparatus to be applied for operating sewing and other machines. (*watchmaker's lathes.*) (*Communicated by Edward Jenner Leyburn.*)	2381	31st Aug. 1870	Alexander Melville Clark.
Instruments for obtaining solar measurements of latitude and time. (*Communicated by Ludwig Ignatius Trueg.*)	2660	7th Oct. 1870	George Haseltine.
Certain improvements in the manufacture of ornamental metallic chains and in certain appliances for producing the same. - - - (*watch chains.*)	2766	20th Oct. 1870	Walter Bancroft. John Wood.
An improved tell-tale mechanism applicable to clocks and watches. (*Communicated by Cyrille Duquet.*)	2931	7th Nov. 1870	David Lang.
Improvements in electric telegraph transmitting and recording instruments and in clocks.	3069	23rd Nov. 1870	Sir William Thomson (Knight).
COAL PLATES.			
Improvements in coal plates whereby they are rendered more suitable for exhibiting advertisements. - - - - -	443	15th Feb. 1870	Henry Collins. Robert Thomas Hedges.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
COATING, COVERING, PLATING, SHEATHING,			
I.—Coating, Plating, Lining and Facing Metallic Surfaces with Metals or other Substances.			
Improvements in spring seats, chairs and mattresses, such improvements being also applicable to other purposes. (*Communicated by Pierre Gustave Nourisse.*)	69	8th Jan. 1870	Alexander Melville Clark.
A new or improved process for cleansing, drawing and tinning wire. (*Communicated by Jean Baptiste Auguste Daubié.*)	188	21st Jan. 1870	Thomas James Smith.
New or improved modes and means of covering and insulating the wires of electric telegraphs.	272	31st Jan. 1870	Robert Dick.
Improvements applicable to telegraphic purposes -	274	31st Jan. 1870	Thomas Walker.
Effecting the electro deposition of nickel -	303	2nd Feb. 1870	Isaac Adams, junior.
Machinery for covering telegraph wires - -	344	7th Feb. 1870	Henry Brooks. Adam Brooks. Thomas Bestwick. William Bestwick.
An improved method of constructing submarine telegraph cables for the support of insulated conductors for communicating intelligence between nations and foreign countries by electricity.	409	11th Feb. 1870	James Story.
Improvements in the manufacture or production of metallic pipes and sheets and in making joints therefor. - - - - (*lining lead pipes with tin or alloys.*)	436	15th Feb. 1870	John Weems. William Weems.
Improved mode and means for preventing dampness and saltpetre.	442	15th Feb. 1870	Henry Dupland.
Adapting iron vessels for receiving and conveying sulphuric and other acid liquids.	445	15th Feb. 1870	Edward Andrew Parnell.
Manufacture of non-conducting material for preventing the radiation of heat. (*covering for steam pipes, cylinders and boilers.*)	531	23rd Feb. 1870	Charles Henry Aston.
An improvement in the manufacture of needles - (*gilding, plating or tinning.*) (*Communicated by Robert Jordan Roberts.*)	550	24th Feb. 1870	Alfred Vincent Newton.
Manufacture of copper tubes and also of copper rollers for calico printing, embossing and similar uses. - - - - (*by electro-deposition.*)	554	24th Feb. 1870	James Balleny Elkington. Charles Edwin Ryder.
Electric cables or conductors - - -	627	3rd March 1870	Samuel Elkens Phillips.
Production of compounds containing xyloidine - (*for covering telegraph wires.*)	787	16th March 1870	Daniel Spill.
The application of cork for preventing loss of heat by radiation, and also for protecting bodies against heat.	791	17th March 1870	Germond de Lairgne.
An improved varnish paint - - (*for coating metallic structures.*)	901	28th March 1870	James Sampson. Richard Rowlands Minton.
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation, and preserving wood and other materials. (*for coating metals.*)	986	4th April 1870	Achille Thomas Anquetil.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
COATING, &c.—*continued.*			
Apparatus for lubricating and covering the spindles employed in machinery for preparing, spinning, doubling and winding fibrous materials.	1059	11th April 1870	John Billington Booth.
Treatment of metal surfaces coated by electro deposition with nickel.	1068	12th April 1870	Isaac Adams, jun.
Manufacture and application of a composition or compositions for preserving the surfaces of walls, metals, wood and other materials.	1379	14th May 1870	Prosper Pimont.
Improvements in apparatus applicable to the conversion of cereal and vegetable substances into saccharine matter, in treating and purifying saccharine substances obtained from starch, malt, fruits and vegetables, in treating fatty matters, and in the manufacture of chemical products. (*lining close vessels or converters.*)	1562	28th May 1870	Alexandre Manbre.
An improved mode of preventing the corrosion of iron exposed to water or dampness. (*Communicated by Cornelius Godfrey.*)	1603	2nd June 1870	Alfred Vincent Newton.
Compounds for insulating telegraph wires, the manufacture of flexible tubing, and other like purposes.	1626	4th June 1870	Daniel Spill.
Meters, pumps or other engines for water or other liquid. (*lining of cylinders.*)	1634	6th June 1870	Alfred Willmer Pocock.
Treatment of slag and other vitreous material - (*for covering steam pipes, &c.*) (*Communicated by Henry Baldwin, jun.*)	1644	7th June 1870	George Tomlinson Bousfield.
Manufacture of tin and terne plates - -	1780	22nd June 1870	Edmund Morewood.
Apparatus for making Bessemer steel - - (*lining the converter.*)	1784	22nd June 1870	Alexander Lyman Holley.
An improved fire-proof composition for safes and other depositories. - - - -	1992	14th July 1870	Charles John Curtis. Augustin Fiddes.
An improved method of incorporating metal and cement in the construction of tanks, boxes, vases or pots for horticultural and other purposes, water and other pipes and conduits, artificial ponds, reservoirs, basins and rivulets, embankments of watercourses and analogous works. (*Communicated by Joseph Monier.*)	1999	15th July 1870	William Edward Gedge.
Mules for spinning - - - - (*encasing falter wires in tubes.*)	2289	19th Aug. 1870	John Rawcliffe, jun. Walter Bibby. Andrew Fleming.
Printing machinery - - - - (*covering bearers.*) (*Communicated by Richard March Hoe.*)	2330	24th Aug. 1870	William Edward Newton.
Manufacture of tacks and nails - - (*electro-plating.*) (*Communicated by Howell Woodbridge Wright.*)	2359	27th Aug. 1870	William Robert Lake.
Manufacture of marine telegraph cables - - (*covering wires with strips of cloth.*)	2367	29th Aug. 1870	Matthew Gray. Frederick Hawkins.
Rotary puddling furnaces - - - (*facings for refining chamber.*) (*Communicated by Samuel Danks.*)	2397	2nd Sept. 1870	George Haseltine.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
COATING, &c.—*continued.*			
Manufacture of casting blocks and printing blocks used for heliographic and other printing. (*coating metal surfaces.*)	2464	13th Sept. 1870	George Baldock. Thomas George Denne. August Hentschel.
An improved mode of and means for electro-plating the interior of lead and other metal tubes or pipes.	2491	15th Sept. 1870	Hamilton E. Towle.
Improvements in the electro deposition of tin, which improvements are applicable to the prevention of the oxidation or tarnishing of silver surfaces, and as a coating for other metals.	2580	28th Sept. 1870	John Edward Bingham.
Apparatus for the manufacture of compounds of collodion. (*for insulating purposes.*)	2649	6th Oct. 1870	William Thomas Henley. Daniel Spill, jun.
Manufacture of tin plates and other metal-coated plates.	2650	6th Oct. 1870	William Evans. Thomas Price.
A continuous process for treating the ores of metals and the apparatus and mechanical appliances used therein. (*lining furnaces.*) (*Communicated by Robert Spencer.*)	2668	8th Oct. 1870	William Edward Newton.
An improved mode of producing a hard protective or ornamental covering or coating of compounds of india-rubber or gutta-percha upon metal and other surfaces. (*Communicated by George Temple Chapman.*)	2790	22nd Oct. 1870	William Robert Lake.
Improvements in boxes and bearings for axles and other shafts, and in compositions to be applied thereto. (*lining axle boxes.*) (*Communicated by Eliza Dexter Murfey.*)	2879	1st Nov. 1870	John Henry Johnson.
An improved metallic composition for roofing, linings, pipes and other purposes. (*Communicated by David Johnson Millard.*)	2935	7th Nov. 1870	William Edward Newton.
An improved process of electro-plating iron and steel with gold or silver. (*Communicated by Alexander Lawe.*)	3005	16th Nov 1870	George Haseltine.
Machinery for drilling or boring rocks and other mineral substances in mining, tunnelling, quarrying and other like operations. (*cylinder and valve casing.*)	3131	29th Nov. 1870	Fenner Ballou Taylor.
Improvements in insulating telegraph wires and in the machinery or apparatus to be employed therein.	3314	19th Dec. 1870	Joseph Rogers.
An improved process for coating iron, steel and other metals with electro-deposit of nickel or cobalt or of both metals in combination.	3396	30th Dec. 1870	Ernst Daniel Nagel.
II.—Coating, Plating, Lining and Facing Glass, Wood, Stone, Plastic Materials, Textile Fabrics, &c.			
Improvements in the manufacture of yarns and fabrics containing horse hair, and in means or methods for shaping and utilizing fabrics containing the same or analogous stiffening material. (*covering cords with cotton or fine yarn.*)	604	1st March 1870	Henry Hayward.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
COATING, &c. —*continued.*			
Manufacture of washable papers - - (*applying a coating of colouring matter.*)	799	17th March 1870	Charles Hermann Rost.
Apparatus for holding postage and other stamps for office and general uses. (*lining the reels.*) (*Communicated by G. Cliffe Hatch.*)	800	17th March 1870	Thomas James Smith.
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation, and preserving wood and other materials. (*for coating glass, pottery, leather, &c.*)	986	4th April 1870	Achille Thomas Anquetil.
Production of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials. (*for covering panels, card cases, &c.*)	1159	20th April 1870	George William Ley.
An improved compound or preparation to be applied to the inside of casks and other vessels.	1275	4th May 1870	Colin Paget Matthews.
Manufacture and application of a composition or compositions for preserving the surfaces of walls, metals, wood and other materials.	1379	14th May 1870	Prosper Pimont.
Enveloping medicinal and other liquids - - (*with a coat of sugar, chocolate, &c.*)	1463	20th May 1870	Jules Joseph Denonal.
Hardening, preserving and facing stone, chalk, brick and other building materials. - - -	1494	24th May 1870	Henry Cockburn Milne Ximenes. Edward Betincourt.
An improved coating for safety fuzes used in mining.	1735	17th June 1870	William Bickford Smith.
Preparation and treatment of wood to preserve the same from decay. (*Communicated by Archibald B. Tripler.*)	2159	2nd Aug. 1870	William Robert Lake.
Covering and preserving medical and other plasters (*Communicated by Dr. Benjamin Brandreth.*)	2391	2nd Sept. 1870	Ernest Seyd.
Manufacture of casting blocks and printing blocks used for heliographic and other printing. - (*coating wood and paper.*)	2464	13th Sept. 1870	George Baldock. Thomas George Denne. August Hentschel.
Packages or receptacles for sulphuric acid - - (*lining casks.*)	2715	14th Oct. 1870	Richard Holden Davis.
Construction of illuminating and ventilating roofs and gratings or plates, parts of which are applicable to ordinary footways and carriage ways. (*silvering edges of glass.*) (*Communicated by Theodore Hyatt.*)	2755	20th Oct. 1870	John Henry Johnson.
An improvement or improvements in the manufacture of lined or coloured paper bags. (*lining with pigment.*)	2773	21st Oct. 1870	Henry Hill Stone.
Manufacture of gun cotton - - - (*covering with sugar.*)	2867	31st Oct. 1870	Robert Punshon.
Machinery or apparatus employed in the manufacture of felt hats and other like coverings for the head. (*lining the wings of hardening machines.*)	2877	1st Nov. 1870	Joseph Vero.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
COATING, &c.—*continued.*			
Improvement in boxes and bearings for axles and other shafts and in compositions to be applied thereto. (*impregnating strands with plumbago.*) (*Communicated by Eliza Dexter Murfey.*)	2879	1st Nov. 1870	John Henry Johnson.
An improved method of imparting elasticity to leather, skins, cotton, cloth and other similar or like articles. (*coating with a solution of india rubber.*)	2911	4th Nov. 1870	John Griffiths.
An improved metallic composition for roofing linings, pipes and other purposes. (*Communicated by David Johnson Millard.*)	2935	7th Nov. 1870	William Edward Newton.
An improvement in boxes for containing furs - (*lining with sawdust.*)	2956	10th Nov. 1870	Thomas Henry Simmonds.
An improved means of rendering casks and other vessels air and water tight. (*coating with a glutinous substance.*)	2987	15th Nov. 1870	John Somervell.
Improvements in carpet linings and stair pads, and in machinery for manufacturing the same. (*Communicated by John Robinson Harrington.*)	3068	24th Nov. 1870	George Haseltine.
Improvements in the manufacture of corrugated and embossed glass, and in the application of the same to the purposes of illumination. (*lining nail holes.*) (*Communicated by Theodore Hyatt.*)	3112	28th Nov. 1870	John Henry Johnson.
An improvement in the manufacture of pavements, waterproof linings and coverings.	3125	29th Nov. 1870	Henry Slingsby Bethell.
Buttons - - - - - - (*Communicated by George J. Capewell Clark, M. Platt and Samuel M. Porter.*)	3188	3rd Dec. 1870	George Haseltine.
Improved means for securing the joints of steam-boilers and tubes. - - - - (*clothing packing rings with metal.*)	3206	6th Dec. 1870	James Howard. Edward Tenney Bousfield.
An improved fabric suitable for carpet linings and other purposes, and improved machinery for manufacturing the same.	3218	7th Dec. 1870	William Henry Maitland.
Improvements in the manufacture of felted fabrics and in the machinery or apparatus employed therein. (*for carriage linings.*) (*Communicated by Robert Spencer.*)	3404	31st Dec. 1870	William Edward Newton.
III.—Coating, Sheathing and Facing Ships; Compositions for the Purpose.			
An improved composition for preventing the fouling of iron and other ships' bottoms, and for preserving metal and other surfaces. - -	370	8th Feb. 1870	William Davison. William Richards.
Manufacture of armour plates and other heavy forms of malleable iron or steel, or of steel and iron combined.	711	10th March 1870	Joshua Jeavons.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
COATING, &c.—*continued.*			
Improvements in the manufacture of bars, plates and sheets of steel, or steel and iron combined, and in the process of welding employed in such manufacture. (*for armour plates.*) (*Communicated by John Absterdam.*)	856	23rd March 1870	William Robert Lake.
Improvements in the manufacture of armour plates and in the machinery or apparatus employed in such manufacture. - - - -	869	24th March 1870	Thomas Claridge. Joshua Jeavons.
Compositions for coating ships' bottoms and other like purposes, also applicable to stone and other building materials.	1096	14th April 1870	William Jesty.
Coatings for iron ships - - - -	1362	12th May 1870	George Fawcus. George Lunge.
An improved metallic paint for preventing the corrosion and fouling of ships' bottoms and other surfaces in water. (*Communicated by James Gamage Tarr and Augustus Henry Wonson.*)	1638	6th June 1870	William Robert Lake.
Coating metal sheathing and other surfaces exposed to the action of sea water, in order to preserve them and keep them clean.	2318	23rd Aug. 1870	William John Hay.
Improvements in the construction of ships of war and fortifications, the said improvements being also applicable to garments to be worn by soldiers and sailors in war time. (*affixing cellular wire-work.*)	2606	30th Sept. 1870	John E. Flander.
Armour-plated ships, forts, fortifications and gun shields.	3300	17th Dec. 1870	John Moore Hyde.
IV.—Covering Rollers.			
Improvements in india-rubber manufactures and in tools or machinery employed therein. - - (*roller covers.*)	295	1st Feb. 1870	George Broadhurst. John Swindells. John Kershaw.
Certain improvements in elastic rolls or tubing for clothes wringers and various other purposes, as well as in machinery for manufacturing the same. (*covering the rolls.*)	786	16th March 1870	Joel Moulton.
Looms for weaving - - - - (*covering cloth roller with india rubber.*)	2085	23rd July 1870	William Lawrence Mitchell.
Printing machinery - - - - (*Communicated by Richard March Hoe.*)	2330	24th Aug. 1870	William Edward Newton.
Machinery for cutting or shaping wood - - (*covering feed rollers.*)	3029	18th Nov. 1870	Allen Ransome.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
COFFEE, COCOA AND TEA; COFFEE-POTS, TEA-POTS, URNS.			
Teapots and other vessels intended to contain hot liquids.	71	8th Jan. 1870	John Holmes Bass.
Means and utensils employed with apparatus used in cooking, combining arrangements for burning a light, forming a complete "kitchener." (*and roasting coffee.*)	658	5th March 1870	Ebenezer Stevens.
Machinery or apparatus for mixing and kneading dough and other ingredients, and for working the same into bread, biscuits and other pastry, and also applicable to other purposes. (*mixing cocoa.*)	1809	25th June 1870	Stephen Norris. Thomas Griffiths.
An improved machine for hulling coffee and rice - (*Communicated by Henry Thomas Pratt and John Carver Alden.*)	1844	28th June 1870	William Robert Lake.
Process and apparatus employed for drying and roasting coffee, chicory, malt and other vegetable substances, also applicable to baking and desiccation generally.	1973	13th July 1870	John Ambrose Coffey.
Improvements in cleaning and polishing coffee and in apparatus employed therein, applicable also to the cleaning and polishing of grain and other produce.	1979	13th July 1870	William Newell.
Drying apparatus for drying agricultural, animal and chemical and commercial products.	2145	1st Aug. 1870	William Alfred Gibbs.
An improved mixture and preparation of coffee and tea.	2160	3rd Aug. 1870	James Spratt.
The manufacture of a powder from beet, carrot, parsnip, mangold wurzel or other saccharine roots, to be used as a substitute for chicory for mixing with coffee or for separate uses as a beverage boiled or infused, and which he designates granule.	2758	20th Oct. 1870	John Howard.
Vessels for making coffee, tea and other infusions -	3003	16th Nov. 1870	John Holmes Bass.
COFFINS.			
Nails for coffins, articles of furniture and other uses.	310	2nd Feb. 1870	Alfred William Theophilus Baker.
Connecting or attaching handles to coffins and other articles.	3271	14th Dec. 1870	Joseph Charles Clive.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
COINS AND MEDALS.			
Apparatus for running or pouring metals, and for moulding and forming the same. (*forming blanks for coins.*)	809	18th March 1870	James Murdoch Napier.
COLLODION.			
Manufacture of artificial flowers and foliage - (*employing collodion.*) (*Communicated by Octave Eugène Fillion.*)	606	1st March 1870	Alexander Melville Clark.
Improvements in the manufacture of non-explosive compounds, forming the material for the manufacture of collodion and other substances, and in apparatus therefor. - - -	1017	6th April 1870	William Thomas Henley. Daniel Spill, junior.
An improved method of manufacturing solid collodion and moulding the same into articles of any desired form. (*Communicated by Isaiah S. Hyatt and John W. Hyatt, junior.*)	2101	26th July 1870	William Robert Lake.
Apparatus for the manufacture of compounds of collodion. - - - - - -	2649	6th Oct. 1870	William Thomas Henley. Daniel Spill, junior.
Improvements in the preparation of artificial teeth and in the manufacture of mouth plates or supports therefor. (*from soluble cotton.*) (*Communicated by Josephus Brockway.*)	2892	2nd Nov. 1870	Urial King Mayo.
COMBS.			
An improved machine or apparatus for clipping horses or other animals. (*metal combs.*)	427	14th Feb. 1870	John Flear.
A new or improved moustache support - - (*curved comb.*)	1616	4th June 1870	John Burley. Laurence Glover.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
COMPASSES; MEASURING ANGLES; SURVEYING AND LEVELLING; MATHEMATICAL AND ASTRONOMICAL INSTRUMENTS.			
Marine and other compasses - - - -	372	9th Feb. 1870	Robert Charles Cutting. Amasa Mason.
An improved instrument for determining the altitude and zenith distance of celestial bodies. (*Communicated by Hall Colby.*)	476	17th Feb. 1870	William Robert Lake.
A new and improved astronomical instrument by means of which is obtained the true time at midday or any other moment of the day, the latitude, the longitude and the meridian line. (*Communicated by François Martin Pannetrat.*)	1023	7th April 1870	Henri Adrien Bonneville.
Steering tell-tales for vessels - - - -	1327	10th May 1870	Edward Augustus Inglefield.
Improvements in applying electricity or electro-magnetism on board ships in order to prevent incrustation or fouling of their bottoms and the deviation of their compasses, and to produce electric light.	1347	11th May 1870	Charles Weightman Harrison.
Apparatus for indicating the local deviation of the mariners' compass in iron or other ships.	1693	13th June 1870	Robert Punshon.
Apparatus for measuring distances by angles of depression, irrespective of height, and determining the distances thereby. (*Communicated by Henry Spiller Watkin.*)	1877	2nd July 1870	John William Spiller Watkin.
Constructing surveying and other instruments in which the magnetic needle is used to take bearings or courses.	2105	26th July 1870	James Naysmith.
Mariners' compasses - - - - -	2163	3rd Aug. 1870	Enrico Fileti.
An improved instrument adapted for taking bearings and for making rapid surveys with approximate accuracy.	2237	11th Aug. 1870	Robert Edward Barker.
Mechanical telegraphs and liquid to be used therewith, which fluid is also applicable as a power transmitter for other purposes, for the making of liquid joints and other purposes where it is desirable to use a liquid that does not readily congeal or evaporate. - - - (*for mariners' floating compasses.*)	2384	1st Sept. 1870	Charles Henry Chadburn. William Chadburn.
Instruments for obtaining solar measurements of latitude and time. (*Communicated by Ludwig Ignatius Trueg.*)	2660	7th Oct. 1870	George Haseltine.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CONDENSING, COOLING, FREEZING.			
Apparatus for puddling iron, applicable also as tuyeres for metallurgical furnaces generally. (*cooling tuyere nozzles.*) (*Communicated by Auguste Ponsard.*)	81	11th Jan. 1870	John Henry Johnson.
Improvements in the construction of steam and other boilers and in apparatus used therewith for economizing heat, condensing steam and saturating heated air.	124	15th Jan. 1870	James Wadsworth.
Improvements in steam-engines and in the boilers and furnaces to be used therewith. (*ejector condensers.*)	166	19th Jan. 1870	Edward Wood.
Preparing surfaces for skating in all seasons - (*Communicated by Matthew Julius Bujac.*)	236	26th Jan. 1870	William Edward Newton.
Refrigerating for the manufacture of ice and other purposes.	267	29th Jan. 1870	Henry Joseph West.
Improvements in india-rubber manufactures, and in tools or machinery employed therein. - - (*ice bags.*)	295	1st Feb. 1870	George Broadhurst. John Swindells. John Kershaw.
Preparation and preservation of animal and vegetable substances to be used as food, and for other purposes, and in apparatus connected therewith.	430	14th Feb. 1870	Alfred Fryer.
Improvements in steam and other boilers, and superheating, condensing, refrigerating and evaporating vessels and apparatus, and in the plates and tubes employed.	449	16th Feb. 1870	Thomas Webster Rammell.
Soap frames - - - - -	496	19th Feb. 1870	Charles Thomas.
Improvements in the manufacture of gas, and in obtaining residual products from such manufacture, and in apparatus to be used in such manufacture. (*condensing ammoniacal vapour.*)	510	21st Feb. 1870	Frank Clarke Hills.
Subdividing particles of water and other fluids, and applying the same to sanitary and other purposes (*for reducing temperatures.*)	596	1st March 1870	Marmaduke Wilkin. John Clark. Adam Scott.
Arrangement and construction of "steam traps" or apparatus for discharging the water resulting from condensed steam from steam pipes or apparatus where steam is employed.	609	2nd March 1870	Frederic Ludovicus Henri William Bünger.
Improved means of ventilating and reducing the temperature of rooms or apartments in vessels, buildings and other structures.	655	5th March 1870	George Elliot.
Puddling and balling furnaces - - - (*keeping cool.*)	660	5th March 1870	Stephen Meredith.
Improved apparatus for injecting and reducing liquids to a state of spray or minute subdivision. (*for condensing vapours.*) (*Communicated by Alcide Sanial du Fay.*)	673	7th March 1870	William Edward Newton.
Apparatus for raising and forcing fluids and for cleaning suction strainers by steam. (*adapted as circulation pumps in surface condensers.*) (*Communicated by Alexander Friedmann.*)	779	16th March 1870	John Clayton Mewburn.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CONDENSING, &c.—*continued.*			
Production of compounds containing xyloidine - (*evaporating or concentrating apparatus.*)	787	16th March 1870	Daniel Spill.
The application of cork for preventing loss of heat by radiation, and also for protecting bodies against heat. (*casing ice houses.*)	791	17th March 1870	Germond de Lavigne.
Improved apparatus for cooling liquids - -	894	26th March 1870	William Dobson.
Improvements in apparatus and in the means employed for heating, cooling or evaporating liquids and for condensing vapours.	922	30th March 1870	George Clark.
Improvements in means and apparatus for seasoning, injecting and preserving wood, part of which improvements is applicable for treating canvas, cordage and other substances to render them impervious to decay.	1041	8th April 1870	John Bennington Blythe.
Structures for the preservation of fruits, vegetables, meats and other perishable articles. (*ice floor and covering.*) (*Communicated by Nathan Hellings.*)	1070	12th April 1870	John Henry Johnson.
Steam-engines - - - - -	1131	19th April 1870	John Frederick Spencer. William Inglis.
An apparatus for the threefold purpose of curing or drying mealy and grainy stuffs, heating, cooling and mixing fluid substances and condensing gaseous ones.	1139	19th April 1870	Melchior Nolden.
Condensers for marine steam-engines - - (*Communicated by John Houpt.*)	1152	20th April 1870	William Robert Lake.
Improvements in the manufacture and in the securing of tubes, taps and plugs in boilers and other vessels, also in certain modes of regulating and stopping the flow of liquids, gases or air into or from such vessels. (*and securing in refrigerators.*)	1180	22nd April 1870	Charles Lungley.
Boilers, air heaters, steam condensers and analogous constructions for transferring heat from one fluid to another.	1191	25th April 1870	Samuel Dyer Tillman.
Steam-engines - - - - (*Communicated by Messrs. Babcock and Wilcox.*)	1286	5th May 1870	William Robert Lake.
Apparatus adapted to be used for refrigerating and also for heating purposes.	1373	13th May 1870	Edward George Peacock.
Apparatus or vessels for cooling - - -	1386	14th May 1870	John Warne.
Apparatus for the manufacture of phosphorus - (*condensing the vapour of phosphorus.*)	1411	17th May 1870	Jacob Hort Player.
Cooling or refrigerating beer, liquors or beverages, and apparatus therefor.	1481	23rd May 1870	William Edwin Heath.
An improved machine for breaking ice for the preservation of fish and other purposes.	1520	26th May 1870	Charles Emerson Barton.
Improvements in the treatment and recovery of metallurgical products, and in the means and apparatus employed therein. (*condensing fumes, filtering.*)	1536	26th May 1870	Julian Bernard.
Improved machinery for making ice and for other refrigerating purposes.	1579	30th May 1870	Leon Mignot.
Treatment of slag and other vitreous material - (*for lining refrigerators.*) (*Communicated by Henry Baldwin, junr.*)	1644	7th June 1870	George Tomlinson Bousfield.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CONDENSING, &c.—*continued.*			
Apparatus for manufacturing iced sirup or cream and soda water beverages.	1650	8th June 1870	Antoine Piccaluga.
Improvements in apparatus for cooling liquids, which improvements are also applicable to distillation and surface condensation.	1814	27th June 1870	Robert Morton.
Means of producing and regulating motive power	1859	30th June 1870	John Bourne.
Improvements in the production of ice, and in apparatus for the same. (*Communicated by Mr. Koehler.*)	1866	1st July 1870	Alexander Melville Clark.
Improved apparatus for the production of ice - (*Communicated by Silvester Bennett.*)	1890	4th July 1870	William Edward Newton.
An improved portable refrigerator - -	1919	7th July 1870	Charles Falck, junior.
Condensers for steam engines - -	1968	12th July 1870	John Walter McCarter.
Mechanical arrangements for cooling and heating liquids and other substances.	1994	14th July 1870	Henry Wilson.
Rotary engines - - - - - (*condensing engine.*)	2010	15th July 1870	Richard Dudgeon.
An improved method of and apparatus for refining and ageing liquors. (*cooling the liquor.*) (*Communicated by Samuel H. Gilman.*)	2167	3rd Aug. 1870	William Robert Lake.
Multitubular apparatus for cooling or heating liquids for distillation and condensation.	2196	8th Aug. 1870	Robert Morton.
Manufacture of twisted metal bars to form augers and drills, and an improved composite machine for twisting such augers and drills and for cutting screws. - - - - - (*cooling twisted bars.*) (*Communicated by Jean Boulay.*)	2220	10th Aug. 1870	Martin Macdermott. Arthur David Williams.
An improved process for forming vacuum in freezing apparatus. (*Communicated by Charles Parker.*)	2363	29th Aug. 1870	Edward Thomas Hughes.
Rotary puddling furnaces - - - (*reducing temperature of surface.*) (*Communicated by Samuel Danks.*)	2397	2nd Sept. 1870	George Haseltine.
Continuous distilling apparatus for distilling petroleum and other kinds of oils. (*condensing and collecting different qualities of oils.*) (*Communicated by Henry Francis Howell.*)	2458	12th Sept. 1870	Thomas Harvey.
Construction of fire bars, and for the employment of them for heating the feed for generating steam and for keeping the bars cool.	2459	12th Sept. 1870	Charles Stephens.
Portable apparatus for manufacturing gas - (*condenser.*)	2591	29th Sept. 1870	George Symes.
New or improved modes of and means or apparatus for utilising the power and heat of the steam used in motive-power engines and for other purposes. (*condensing apparatus.*) (*Communicated by Treat Timothy Prosser.*)	2608	1st Oct. 1870	William Richard Middlemore Thomson.
Improvements in condensing and cooling the smoke and products of combustion arising from steam boiler and other furnaces, and in the apparatus employed therein.	2670	8th Oct. 1870	Alfred Stansfield Rake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CONDENSING, &c.—*continued.*			
Apparatus for cooling or refrigerating liquids -	2673	8th Oct. 1870	Adolphus Frankenberg.
Steam engines - - - - - (*Condenser.*) (*Communicated by John Houpt.*)	2678	10th Oct. 1870	William Robert Lake.
Improvements in the manufacture of salt and in the apparatus employed therein. (*Communicated by J. R. Buchanan.*)	2782	21st Oct. 1870	William Edward Newton.
Apparatus for cooling and refrigerating liquids, manufacturing ice and obtaining ammoniacal solution for the same and other purposes.	2891	2nd Nov. 1870	Rees Reece.
Construction of apparatus for concentrating sulphuric acid. (*cooling the alembic.*)	2975	12th Nov. 1870	August Ferdinand De Hemptinne.
Condensers for steam pumps - - - (*Communicated by William Craig and Henry Lefferts Brevoort.*)	3049	21st Nov. 1870	Alfred Vincent Newton.
Apparatus or machinery employed in the manufacture of sheet glass and other objects made of glass. (*cooling.*)	3101	26th Nov. 1870	Samuel Bowen.
Improvements in condensing steam, in precipitating and reducing heat and smoke, and in apparatus therefor.	3123	29th Nov. 1870	Matthew Burnett.
Certain improvements in engines worked by steam and other elastic fluids and in valves - -	3176	3rd Dec. 1870	George Holcroft. William Nathan Dack.
Apparatus for obtaining, condensing, utilising and applying mineral and other waters.	3202	6th Dec. 1870	Thomas Dunn.
Cooling or freezing machines - - - (*Communicated by Eugene Dominique Nicolle and Thomas Sutcliffe Mort.*)	3210	6th Dec. 1870	William Mort.
Surface condensers - - - - -	3266	15th Dec. 1870	William Allan.
Construction of refrigerating or ice-making machines, condensers and attemperators.	3296	16th Dec. 1870	John Gamgee.
Apparatus for cooling paraffin solutions or other solidifiable or partially solidifiable liquids.	3310	19th Dec. 1870	Norman McFarlane Henderson.
Improvements in the mode of condensing saccharine juices and in apparatus to be employed therein, which apparatus is applicable to evaporating other liquids. (*See* "HEATING.")	3324	20th Dec. 1870	Robert Tooth.
CONFECTIONERY, LOZENGES, LIQUORICE CAKES.			
Enveloping medicinal and other liquids - - (*under the form of sugar plums.*)	1463	20th May 1870	Jules Joseph Denoual.
Apparatus for manufacturing iced sirup or cream and soda water beverages.	1650	8th June 1870	Antoine Piccaluga.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CONFECTIONERY, &c.—*continued.*			
Improvements in machinery or apparatus and vessels for feeding, dusting, stirring, mixing or kneading flour and heating or boiling water or liquids for the manufacture of bread, biscuits, cakes, puddings, paste, buns, muffins, crumpets and other articles of food, which improvements are also applicable for beating and mixing, heating or boiling various ingredients or plastic substances, churning or other purposes.	1875	2nd July 1870	Ebenezer Stevens.
Improved means of dyeing or coloring articles - (*confectionery embellishments.*)	2082	23rd July 1870	Gaudente Sparagnapené.
A novel application of stereoscopic views to match boxes and other boxes or cases. (*sweetmeat boxes.*)	2408	3rd Sept. 1870	Hippolyte Fontaine.
Apparatus or machinery for the manufacture of certain kinds of sweetmeats and lozenges.	2526	20th Sept. 1870	Thomas Edward Bond.
An improved machine for cutting and printing lozenges and crackers. (*Communicated by Ernest Greenfield and Philipp Strauss.*)	2934	7th Nov. 1870	Alexander Melville Clark.
COOKING AND APPARATUS USED IN COOKING.			
Apparatus for cooking, heating and lighting by gas.	463	17th Feb. 1870	Sigismund Leoni.
Cooking ranges - - - - - -	514	22nd Feb. 1870	Hugh Ferguson.
Means and utensils employed with apparatus used in cooking, combining arrangements for burning a light, forming a complete "kitchener."	658	5th March 1870	Ebenezer Stevens.
Improvements in the manufacture of hollow cast-iron cooking utensils and in the means or apparatus employed therefor or connected therewith, part of which apparatus is applicable to the moulding of other articles.	696	9th March 1870	John Neilson.
An improved portable oven, a modification of which may also be used for heating apartments. (*for cooking.*)	964	2nd April 1870	James Wadsworth.
An improved combination of articles used for culinary purposes. (*see* "BREAD.") (*Communicated by Sydney Cooke.*)	1146	19th April 1870	Charlotte Cooke.
Gas cooking stoves - - - - -	1206	26th April 1870	John Palmer.
Apparatus adapted to be used for refrigerating and also for heating purposes. (*keeping food hot.*)	1373	13th May 1870	Edward George Peacock.
Apparatus for the production of gases for lighting and heating purposes. (*cooking.*) (*Communicated by Xavier Moussard.*)	1456	19th May 1870	Alexander Melville Clark.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
COOKING, &c.—*continued.*			
Improvements in planishing, levelling and creasing frying pans and other metallic articles, and in tools or apparatus employed for those purposes.	1807	25th June 1870	Samuel James Fellows. Edgar Fellows.
An improved method of and apparatus for separating aqueous from oleaginous substances. (*fat for culinary purposes.*)	1845	28th June 1870	Henry Medlock.
Apparatus for cooking by gas - - -	2117	28th July 1870	Anthony Gapper Southby.
Apparatus for disinfecting, purifying and drying and also for cooking by heated air.	2194	6th Aug. 1870	Sigismund Leoni.
Improvements in the handles of sad irons or smoothing irons, stew pans, saucepans, frying pans and other articles of hollow ware, and in connecting the said handles to the said articles respectively. - - - - - -	2455	10th Sept. 1870	George Hardman. Samuel Simkins.
Self-acting basting jacks - - -	2702	13th Oct. 1870	John Onions.
Apparatus for heating liquids and for producing a constant circulation of the same therein. (*heating cooking vessels.*)	2778	21st Oct. 1870	John Stephens.
Improvements in making moulds for casting and in apparatus therefor. (*pots and hollow ware.*)	2977	12th Nov. 1870	John Page.
Gas stoves or apparatus for cooking and heating purposes.	3162	2nd Dec. 1870	John Joseph Parkes.
Apparatus for heating purposes principally adapted for heating conservatories, halls, churches, rooms, offices and other structures and places. - (*heating food.*)	3341	21st Dec. 1870	Sealy James Best. John Bale.
COPYING, TRACING, DRAWING AND WRITING.			
Improvements in the means for moistening the sheets of letter book and copying paper and in apparatus connected therewith.	56	7th Jan. 1870	William James Purcell.
Means or apparatus for damping copying paper, stamps, labels and other materials and articles.	57	7th Jan. 1870	Henry Pritty.
Copying presses - - - - - -	373	9th Feb. 1870	Thomas Alfred Warrington.
Preparing and producing drawings or designs upon squares or ruled design paper for manufacturing and other purposes, and for protecting and preserving the same from injury.	775	16th March 1870	George Holdsworth.
Improved modes, means and apparatus for and connected with the copying of letters and other documents. - - - - - -	830	21st March 1870	George Barker. James McFarlane.
An improved stand or frame for containing paper, pens, inks and other stationery in combination with a thermometer and other articles for offices and counting-houses.	1016	6th April 1870	Charles H. Wight.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
COPYING, &c.—*continued.*			
Apparatus or means for manipulating gold leaf for ornamenting and lettering. (*lettering on glass.*)	1138	19th April 1870	Ezra Hoyle.
Apparatus for copying letters and other manuscripts or documents. - - -	1271	3rd May 1870	John Guy. Charles John Guy. Frederick Spencer Guy.
Improvements in writing music and in the apparatus employed therefor.	1339	11th May 1870	Alexandre Amédée Rossignol.
Means for writing and telegraphic purposes - (*Communicated by Malling Hansen.*)	1385	14th May 1870	Peter Jensen.
Copying presses - - - - (*Communicated by John Fensom.*)	1853	29th June 1870	William Spence.
Construction of true surfaces and edges applicable to drawing purposes.	2264	15th Aug. 1870	William Ford Stanley.
An improved process for making railway and other tickets, trade-mark labels, commercial cards or similar printed forms.	2375	30th Aug. 1870	William Thomas Guyatt.
A new writing machine available for reporting, corresponding and other similar purposes.	2547	23rd Sept. 1870	Henry Schooh.
An improved method of producing divers coloured letters, figures or other characters upon a card, ticket, label, placard or other like article, or upon any suitable surface for advertising or similar purposes. (*ruling and printing.*)	2687	11th Oct. 1870	Charles John Letts.
An improved method of and apparatus for carrying on secret correspondence. - - -	2731	17th Oct. 1870	Joseph Seelie Greenhow. George Onley Gooday.
An improved apparatus by means of which systems of cypher may be readily produced.	2921	5th Nov. 1870	Edward Vansittart Neale.
Machinery for tracing and multiplying patterns, designs and such like. (*Communicated by F. Henry Langsdorff.*)	2930	7th Nov. 1870	Robert Boyd.
Type writing machines - - -	3234	9th Dec. 1870	Gustavus Palmer Harding.
CORK; CORKS, BUNGS AND VENT-PLUGS.			
The application of cork for preventing loss of heat by radiation, and also for protecting bodies against heat.	791	17th March 1870	Germond de Lavigne.
An improved apparatus combining the functions of a bung and of a self-acting vent peg.	1160	21st April 1870	Romain François Bigot.
Preparation of corks for rendering them impermeable and to preserve them from decay. (*Communicated by Auguste de Müller.*)	1670	9th June 1870	Charles Denton Abel.
An improved cork, stopper or plug - -	1730	17th June 1870	Gilbert Stanton Fleming.
Machinery for cutting corks - - - (*Communicated by Louis Dollone.*)	1751	18th June 1870	William Edward Gedge.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CORK, &c.—*continued.*			
An improved apparatus combining the functions of a bung and of a self-acting vent-peg. (*Communicated by Romain François Bigot.*)	2751	19th Oct. 1870	William Edward Gedge.
Preparation and use of peat or turf, and bituminous, resinous and ligneous substances, as fuel and for other purposes. (*substitute for cork.*)	2831	27th Oct. 1870	Jacob Geoghegan Willans.
Cork cutting knives or apparatus, applicable also to cutting other substances than cork.	3010	17th Nov. 1870	Matthew Dodds.
CUTTING, SAWING, PLANING.			
I.—Cutting, Sawing, Planing, &c. Metal, Stone, Wood, Cork and Slate.			
Machinery or apparatus for cutting wood into shreds or shavings to be used in the manufacture of paper.	129	15th Jan. 1870	John Robinson. John Smith.
Improvements in wooden pavements and in cutting the blocks therefor. (*Communicated by William Wilmot Ballard.*)	130	15th Jan. 1870	Alexander Melville Clark.
Machinery for cutting splints for matches and other purposes.	138	17th Jan. 1870	George Baker.
Improvements in the manufacture of chains and chain cables, and in machinery for the same. (*Communicated by Augustin Onésime David.*)	193	21st Jan. 1870	Alexander Melville Clark.
Machinery or apparatus for cutting curved and irregular forms.	247	27th Jan. 1870	Archibald Douglas Brown. James Wotherspoon Brown.
Motive-power engines and steam generators to be used therewith, suitable for domestic purposes. (*driving saws.*) (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johnson.
Morticing machines	300	1st Feb. 1870	Francis Robert Whitcombe Hedges.
Improved machinery for cutting, dressing or working stone. (*Communicated by Carl Friedrich Schlickeysen.*)	327	4th Feb. 1870	Henry Edward Newton.
Means or apparatus for straightening, stamping-out, shearing and otherwise shaping and treating iron, steel, copper and other metallic plates and sheets. (*Communicated by Gustave Piedbœuf.*)	351	7th Feb. 1870	Hermann Wedekind.
Improvements in the manufacture of twisted metal bars to form augers and drills, and an improved composite machine for twisting such augers and drills for screw cutting and for cutting metal rods, bars and tubes. (*Communicated by Monsieur Jean Boulay.*)	404	11th Feb. 1870	Martin Macdermott. Arthur David Williams.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CUTTING, &c.—*continued.*			
Apparatus or machinery to be employed for facing, grooving or otherwise preparing blocks of stone, portions thereof being also applicable for other purposes.	429	14th Feb. 1870	Thomas Taylor Lingard.
Machinery for cutting and shaping wood - -	439	15th Feb. 1870	Archibald Neill.
Manufacture of stocks for screwing and cutting iron pipes, bolts and other similar uses.	525	23rd Feb. 1870	George Leech.
Apparatus for cutting coal and other mineral -	620	2nd March 1870	George Edmund Donisthorpe.
Machinery or apparatus for cutting or dressing stone.	803	18th March 1870	Robert Girdwood.
Machinery for sawing wood and other substances -	805	18th March 1870	Colin Young.
Doffers of condensing carding engines and means or apparatus for effecting the same. (*cutting out card teeth to form grooves.*)	833	21st March 1870	Samuel Brooke.
Improvements in machinery for grinding and polishing saws, also applicable for grinding and polishing sheets or plates of steel and other metals. (*Communicated by William Jackson Lippincott.*)	889	26th March 1870	Charles Denton Abel.
Improvements in machinery for turning, shaping, cutting and boring wood and other substances, and in machinery for preparing cutters or tools for turning.	933	31st March 1870	Jonathan Sellers.
Improved machinery for making horse-shoe and other nails. (*cutting off.*) (*Communicated by Sebastien Schlesinger.*)	973	2nd April 1870	William Edward Newton.
Tube cutters and screw stocks - - -	978	2nd April 1870	Henry James Taylor Piercy.
Vertical saw frames - - - -	1066	12th April 1870	William Blackett Haigh.
Machines for shaping staves for casks and barrels - (*Communicated by Albert Taubert.*)	1083	13th April 1870	William Spence.
Apparatus for dressing and furrowing millstones -	1120	16th April 1870	James Lee Norton.
Stone-cutting apparatus - - - -	1202	26th April 1870	Sir William Fothergill Cooke. George Hunter.
Improved machinery for cutting slate, marble and other like materials.	1234	29th April 1870	Henry Edward Curtis.
Improvements in planes for chamfering and moulding and in means connected with their use.	1291	5th May 1870	Frederick Hart.
Machinery for shaping wood and other material -	1395	16th May 1870	Henry Augustus Biertumpfel. William James Loveday.
Sawing machinery - - - -	1398	16th May 1870	Thomas Fawcett.
Machinery and arrangements for cutting or getting minerals.	1471	21st May 1870	George Simpson.
Improved machinery for grinding hand saws - (*Communicated by William Finley Semple.*)	1487	23rd May 1870	William Edward Newton.
Improvements in the manufacture of sockets and ferrules of wrought iron and other metals, and in machinery employed for that purpose. (*Communicated by Robert Briggs.*)	1569	30th May 1870	Charles Denton Abel.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CUTTING, &c. —*continued.*			
An improved machine for making cut nails -	1597	2nd June 1870	Henry Scheuerle. Daniel Guqisperg. Carl Scheib.
Rotary engines and pumps - - - - - (*for driving saw mill machinery.*)	1679	10th June 1870	Robert Thomas Yeadon Johnson.
Machinery for cutting corks - - - (*Communicated by Louis Dollone.*)	1751	18th June 1870	William Edward Gedge.
Means and apparatus for cutting type, and carving, moulding and ornamenting wood, metal, stone and other materials. - - - - -	1776	22nd June 1870	William John Cunningham. Alphonso Dabb.
An improved process of drilling and cutting plane surfaces in the manufacture of crystal, glass or metal ware, and an improved lathe for this purpose. (*Communicated by Georges Blau.*)	1819	27th June 1870	William Edward Gedge.
Apparatus for cutting wood into small strips, filaments or shavings.	1828	27th June 1870	William Riddell.
Improved apparatus for dressing stones to be employed for decorticating grain or seeds. (*Communicated by Charles Golay.*)	1873	2nd July 1870	John Henry Johnson.
Dressing or cutting millstones - - - - -	1884	4th July 1870	Edward Copeland Stiles. John Fenn Elsdon.
Means and apparatus employed in cutting various substances.	1909	6th July 1870	John Bourne.
Improvements in screws and screw drivers, and in machinery for the manufacture of screws.	1971	12th July 1870	John Frearson.
Machinery or apparatus for reducing wood, metal or other hard material to fixed patterns. (*Communicated by Frederick Baldwin.*)	1987	14th July 1870	Giovanni Sconcia.
Improvements in pneumatic stamps and hammers, also applicable to machinery for driving piles, cutting, splitting or dressing stone, and for boring rocks.	2011	16th July 1870	William Husband.
An improved wind engine or apparatus for obtaining and applying motive-power. - - (*for sawing stone, &c.*)	2033	19th July 1870	Charles Horton Plowright. William Plowright.
Improvements in cutting metals and other substances, and in the apparatus used therefor.	2133	30th July 1870	Emanuel Lawrence.
Cutting, boring, grinding and pulverizing stone and other hard substances. (*Communicated by Benjamin Chew Tilghman.*)	2147	1st Aug. 1870	Alfred Vincent Newton.
Machinery or apparatus for cutting wood into shreds or shavings to be used in the manufacture of paper. - - - - -	2321	23rd Aug. 1870	John Robinson. John Smith.
Machinery or apparatus for forming, hardening, tempering, straightening and cutting paragon or other wires to be used for ribs and stretchers of umbrellas or other useful purposes. - -	2420	6th Sept. 1870	Charles Bottom. Joseph Hallam. Samuel Westley Hallam.
Machinery for manufacturing type - - (*Communicated by William Wallace Dunn.*)	2427	7th Sept. 1870	George Haseltine.
A new or improved tube expander and tube cutter combined.	2434	8th Sept. 1870	Treat Timothy Prosser.
Machinery for cutting dovetail mortises and dovetail pins or tenons.	2471	14th Sept. 1870	Robert Thompson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CUTTING, &c.—*continued.*			
Machinery for cutting and shaping slate - -	2494	16th Sept. 1870	William Boggett.
Cutter heads and cutters of cylindrical wood-planing machines.	2545	22nd Sept. 1870	John More.
Improvements in machinery for cutting wood and partly applicable to hand braces. - -	2584	29th Sept. 1870	John Hill. Alexander Morton Strathern.
Apparatus for cutting sugar canes and other substances. - - - -	2621	1st Oct. 1870	Edmund Alfred Pontifex. John Barton.
Improvements in or applicable to machinery or apparatus for cutting wood to any required pattern or design.	2671	8th Oct. 1870	William Ellis.
Manufacture of the cutting tools or laps used by glass cutters, lapidaries and other similar handicraftsmen. - - - -	2795	24th Oct. 1870	John William Hoffman. Henry Eustace Fearn.
Cutting, boring, grinding and pulverizing stone and other hard substances. (*Communicated by Benjamin Chew Tilghman.*)	2900	3rd Nov. 1870	Alfred Vincent Newton.
A new machine for grinding, polishing and concaving circular and other saws, and other tools and substances.	2937	8th Nov. 1870	Edward Joseph Jones.
Cork cutting knives or apparatus, applicable also to cutting other substances than cork.	3010	17th Nov. 1870	Matthew Dodds.
Machinery for cutting or shaping wood - -	3029	18th Nov. 1870	Allen Ransome.
Improved apparatus or combination tool for military and other purposes. (*for cutting wood.*)	3243	10th Dec. 1870	John Collis Browne.
Preparing and applying slate to useful and ornamental purposes.	3275	14th Dec. 1870	William Boggett.
Punching and shearing apparatus - -	3297	17th Dec. 1870	Robert Baird.
Machinery for shearing metals - - - (*Communicated by Robert Briggs.*)	3332	21st Dec. 1870	Walter Williams.
For cutting or getting coal, *see* "MINING." For cutting and rasping dyewoods, *see* "DYES." For cutting files, *see* "FILES AND RASPS." For cutting screws, *see* "NAILS."			
XL.—Cutting Paper, India-rubber and Tobacco; Cutting and Splitting Leather and Cloth.			
Improvements in the spinning and manufacture of stick and roll tobacco and in the machinery therefor, parts of which are applicable to the spinning of other fibrous materials. (*cutting into lengths.*)	44	5th Jan. 1870	William Wharton.
An improved mode of cutting leather for the soles and heels of boots and shoes. - -	329	4th Feb. 1870	John Willis. James Southall.
Improvements in the manufacture of pressed leather, and in machinery employed for this purpose. - - - - (*splitting or dividing leather scraps.*)	543	24th Feb. 1870	Alfred Dickson. Thomas Law.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CUTTING, &c.—*continued.*			
Machinery or machines for type design and colour printing on paper and other materials, and creasing, scoring or bending, cutting and perforating the same simultaneously.	562	25th Feb. 1870	Edward Tomlinson.
Improvements in the manufacture of yarns or threads, and in apparatus to be used therein. (*cutting apparatus.*)	1076	12th April 1870	Gustavus Adolphus John Schott.
Machinery for cutting heel and sole pieces or other forms of leather.	1166	21st April 1870	James Thomas Sheppard.
Machinery or apparatus for cutting or shearing and ripping and clipping the "whip" of lappet cloth or other fabrics.	1248	2nd May 1870	James Christie.
An improved tool for cutting net lace and other like fabrics. - - - -	1355	12th May 1870	Leon Octave Deschamps. Stanislas Delisse Oudit.
Machinery or apparatus for cutting the pile of velvets, velveteens, and other piled fabrics.	2209	9th Aug. 1870	John Taylor.
Improvements in the manufacture of "bunches" or "fillers" for cigars, and in the preparation of tobacco therefor. (*Communicated by Adolph Pearl.*)	2492	15th Sept. 1870	William Edward Newton.
An improved machine for cutting mill boards, card and similar materials to a required breadth and length.	2502	16th Sept. 1870	Henry James Williams.
Machinery for skiving and cutting leather for the manufacture of boots and shoes. - - (*Communicated by Champion Brown and William Childs.*)	2533	21st Sept. 1870	William John Barron. Edmund Charles Barron.
An improved machine for cutting paper hangings -	2566	26th Sept. 1870	David Pirie. Alexander Croom.
Improvements in the manufacture of pressed leather, and in apparatus for cutting leather into various forms.	2697	12th Oct. 1870	Frederick John Bugg.
Improvements in apparatus and in the manufacture of leather laces and strips.	2883	2nd Nov. 1870	Thomas Saunderson.
Machinery for cropping or shearing textile fabrics -	2932	7th Nov. 1870	John Clayton.
Improved machinery or apparatus for doubling, cutting off, separating and folding paper, as delivered from rotary web printing machines. - (*Partly communicated by George Lauder.*)	3031	19th Nov. 1870	George Duncan. William Ashley Wilson.
Self-acting machinery for making and finishing boots and shoes. - - - (*cutting tool.*)	3048	21st Nov. 1870	Charles Henry Southall. John Blakey.
Improvements in the manufacture of candles and in apparatus to be employed therein. (*wick cutting machine.*)	3288	15th Dec. 1870	Jesse Ascough.
Improvements in machinery for cutting artificial and other leather, particularly applicable for utilising waste pieces.	3299	17th Dec. 1870	Joseph Hall.
Machinery or apparatus employed in the cutting or clipping of lace and other fabrics.	3340	21st Dec. 1870	James Cook.

For cutting roots, &c., *see* "FOOD FOR CATTLE."
For cutting sugar, *see* "SUGAR."
For cutting rags for paper-making, *see* "PAPER."
For cutting soap, *see* "SOAP."
For cutting or slicing cucumbers, *see* "PRESERVING FOOD."

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CYLINDERS, ROLLERS, DRUMS; COVERING ROLLERS.			
Certain improvements in self-acting temples for looms. - - - - - - - (*spiked rollers.*)	5	1st Jan. 1870	John Elce. Richard Bond.
Machinery for rolling bars for the manufacture of shoes for horses and other hoofed animals. (*constructing the rolls.*)	30	4th Jan. 1870	Edward Cottam.
Improvements in the spinning and manufacture of stick and roll tobacco and in the machinery therefor, parts of which are applicable to the spinning of other fibrous materials. (*forming the rolls.*)	44	5th Jan. 1870	William Wharton.
Improvements in rails, chairs and joints for the permanent way of railways, and in machinery for manufacturing such rails. - - - (*grooved rolls.*)	101	12th Jan. 1870	Alfred Buckingham Ibbotson. Johan Anderson Lindblad.
Improvements in machinery for breaking and softening flax and other fibrous materials, which improvements are also applicable to calendering rollers and other purposes where a combined reciprocating rotary motion can be employed.	128	15th Jan. 1870	Thomas Robert Hay Fisken.
Machines for sizing yarn - - - - (*Communicated by William Lancaster.*)	145	18th Jan. 1870	Henry Bernoulli Barlow.
Printing machinery - - - -	170	19th Jan. 1870	David Servante, junior.
An improved apparatus for lubricating parts of locomotive and other engines. (*cylinders.*) (*Communicated by Pierre Freitel.*)	218	24th Jan. 1870	William Edward Gedge.
Improved machinery for manufacturing semolina and flour. (*constructing flour rolls.*)	229	25th Jan. 1870	Gustav Adolph Buchholz.
Improvements in india-rubber manufactures and in tools or machinery employed therein. - (*roller covers.*)	295	1st Feb. 1870	George Broadhurst. John Swindells. John Kershaw.
Improvements in machinery or apparatus for washing or scouring and drying wool and other fibrous materials and yarns or threads. (*squeezing rollers.*)	386	9th Feb. 1870	John Petrie, junior.
Certain improvements in the construction of cylinders and rollers used for carding cotton, wool or other fibrous substances.	470	17th Feb. 1870	Evan Arthur Leigh.
Manufacture of non-conducting material for preventing the radiation of heat. (*covering for cylinders.*)	531	23rd Feb. 1870	Charles Henry Aston.
Manufacture of copper tubes and also of copper rollers for calico printing, embossing and similar uses. - - - - - - -	554	24th Feb. 1870	James Balleny Elkington. Charles Edwin Ryder.
Machinery for hulling or treating grain - -	637	4th March 1870	Robert Young.
Machinery for twisting, compressing and rolling tobacco, applicable also to rolling, compressing and drawing metals. - - - -	652	5th March 1870	Elijah Robinson. Charles Frederick Robinson. James Edward Hyde Andrew.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CYLINDERS, &c.—*continued.*			
Atmospheric stamps and hammers, partly applicable to other purposes. (*constructing the cylinder.*)	749	15th March 1870	William Husband.
Sizing machines - - - - - (*making breast beam of steel tubing.*)	764	15th March 1870	Edward Dugdale. Joseph Dugdale.
Mules for spinning and doubling - - (*making the tin rollers.*)	771	16th March 1870	Robert Lakin. William Henry Rhodes. John Wain. William Greasley.
Certain improvements in elastic rolls or tubing for clothes wringers and various other purposes, as well as in machinery for manufacturing the same.	786	16th March 1870	Joel Moulton.
Lithographic, zincographic and other printing presses. (*inking rolls, damping rolls impression cylinder.*) (*Communicated by Charles Parker.*)	796	17th March 1870	Edward Thomas Hughes.
An improved lubricating apparatus for lubricating the slide valves and cylinders of steam-engines.	829	21st March 1870	John Ferris.
Improvements in the manufacture of wheel tyres and in the machinery or apparatus employed therefor. (*bending rolls.*)	848	22nd March 1870	Daniel Gray.
Improvements in or applicable to machinery for spinning and twisting fibrous substances. - (*mounting rollers for driving the bobbins, &c.*)	900	28th March 1870	John Hopkinson. Robert Newton.
Lubricators - - - - - (*for steam cylinders.*)	938	31st March 1870	Charles Dudley Austin.
Machinery to be employed in drawing, spinning, and twisting fibres. (*presser rollers.*)	993	5th April 1870	James Pickup.
Machinery for etching or engraving cylinders used in printing and embossing. - - -	1033	8th April 1870	James Edmondson. William Edmondson. Frederick William Edmondson.
Improvements in machinery or apparatus for felting or "planking" the bodies of hats or other coverings for the head, which improvements are also applicable to other felting purposes. - (*form of working rollers.*)	1069	12th April 1870	James Kirk. Samuel Skelmerdine. Cephas Froggatt.
Improvements in water meters and in apparatus for boring cylinders.	1108	14th April 1870	Edward Pattison Sheldon.
Looms for weaving - - - - (*letting off rollers.*)	1134	19th April 1870	Richard Cherry.
Construction of oscillating cylinder engines -	1216	27th April 1870	Henry Edward Curtis.
Steam-engines - - - - - (*Communicated by Messrs. Babcock and Wilcox.*)	1286	5th May 1870	William Robert Lake.
Machinery for etching or engraving rollers for calico printers.	1297	6th May 1870	Robert Leake.
Machines for lapping cotton and other fibrous materials. (*soldered wire screen cylinders.*) (*Communicated by Richard Kitson.*)	1451	19th May 1870	William Robert Lake.
Improvements in the construction of tramways and in engines and carriages employed thereon.	1475	21st May 1870	Edward Ellis Allen.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CYLINDERS, &c.—*continued.*			
Supporting apparatus for the rollers of spinning frames. (*Communicated by Florentine Augustin Steverlynck-Delecroix, Edmond Steverlynck and Leon Steverlynck.*)	1506	24th May 1870	William Robert Lake.
Improvements in machinery for corrugating and moulding sheet metal, which improvements are also applicable for other purposes. (*surfaces of rollers, forming corrugations on rollers.*) (*Communicated by Asa Johnson and William Thornton Still.*)	1566	28th May 1870	Alexander Melville Clark.
A new or improved electro-magnetic apparatus for moving panoramas, advertisements or other things required to be exhibited. (*rollers and drums.*) (*Communicated by Louis Finger.*)	1584	31st May 1870	Bristow Hunt.
Machinery for engraving or etching rollers for calico printers. - - - -	1605	3rd June 1870	Robert Leake. Henry Larkin.
Thrashing machines - - - (*constructing drums.*)	1619	4th June 1870	Henry Brinsmead. Richard Lyons.
Improvements in attaching or fixing the devices for effecting the water mark in paper to the covers of the dandy rolls, and to the moulds used in the manufacture of paper, also in the construction of such dandy rolls, covers and moulds. - - - -	1631	6th June 1870	Thomas Allen Marshall. Charles Dudley Marshall.
Meters, pumps or other engines for water or other liquid. (*lining of cylinders.*)	1634	6th June 1870	Alfred Willmer Pocock.
Machinery for binding, wrapping and forming cigars. (*Communicated by Socrates Scholfield.*)	1727	16th June 1870	William Edward Newton.
Improvements in fire-arms and ordnance, and in rifled projectiles and machinery for the manufacture of the same. (*construction of double barrels.*)	1745	17th June 1870	Sir Joseph Whitworth.
Doffing and dividing apparatus applicable to continuous cards. (*Communicated by J. S. Bolette.*)	1754	18th June 1870	Benjamin Joseph Barnard Mills.
An improved machine for hulling coffee and rice - (*Communicated by Henry Thomas Pratt and John Carver Alden.*)	1844	28th June 1870	William Robert Lake.
Apparatus for cleaning the fluted and top rollers of machines used in preparing and spinning cotton and other fibrous substances. - - -	1922	7th July 1870	Benjamin Dobson. Thomas Thornley. John Settle.
An improved hot-air engine - - - (*construction of cylinder.*)	1945	9th July 1870	Thomas Tertius Chellingworth.
Apparatus for pumping and forcing air and other fluids, and which apparatus is peculiarly applicable to desiccating the ventilation of mines, buildings, ships and other structures, and for blast and other purposes.	1976	13th July 1870	William Cowley.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CYLINDERS, &c.—*continued.*			
Improvements in cleaning and polishing coffee and in apparatus employed therein, applicable also to the cleaning and polishing of grain and other produce. (*rotating cylinders.*)	1979	13th July 1870	William Newell.
Machinery for washing or scouring wool and other fibrous materials. (*lifting cylinders.*)	2060	21st July 1870	John Petrie, junior.
Looms for weaving - - - -	2065	23rd July 1870	William Lawrence Mitchell.
Steam-engines - - - -	2184	5th Aug. 1870	Max Eyth.
Improvements in the mode of extracting the filaments of straw and the bark of the mulberry tree, and in converting the same into pulp for the manufacture of paper, and in the apparatus therefor.	2190	6th Aug. 1870	Gustave Demailly.
Means and apparatus for working brakes for the rolling stock of railways and tramways, as also for working feed-water pumps in connection therewith. (*brake cylinder.*) (*Communicated by George Westinghouse, junior.*)	2235	11th Aug. 1870	Charles Denton Abel.
Certain improvements in the construction of cylinders and rollers used for carding cotton, wool, silk or other fibrous substances, also in roller carding generally.	2267	16th Aug. 1870	Evan Arthur Leigh.
Knitting machines - - - - (*cam cylinder.*) (*Communicated by William Henry Abel.*)	2323	23rd Aug. 1870	William Robert Lake.
Manufacture of iron and steel and apparatus used therein. (*fettling drums.*)	2373	30th Aug. 1870	John James Bodmer.
Machinery or apparatus for printing yarns or warps for carpets or other fabrics. (*colour rollers.*)	2386	1st Sept. 1870	Archibald Turner.
Machinery for washing wool - - - (*Communicated by John Yewdall and William Yewdall.*)	2392	2nd Sept. 1870	Bristow Hunt.
Improvements in sizing machines and in the method of sizing yarns. (*immersion rollers.*)	2461	12th Sept. 1870	John Lancaster.
An improved type casting, breaking, rubbing and setting machine. (*pump cylinder.*)	2527	20th Sept. 1870	John Alfred Thomas Overend.
Machinery for breaking cotton seed to facilitate the separation of the kernal from the husk. - (*forming the cylinder surfaces.*)	2532	21st Sept. 1870	Thomas Rose. Robert Emerson Gibson.
Wool-combing machines - - - (*conical rollers.*)	2538	22nd Sept. 1870	Isaac Bailey.
Machinery for preparing and spinning cotton and other fibrous substances. (*card cylinders.*)	2540	22nd Sept. 1870	Edwin Pettitt.
Improvements in steam, air and gas and in fluid or hydraulic engines. (*construction of the cylinders.*)	2554	23rd Sept. 1870	William Firth.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CYLINDERS, &c.—*continued.*			
An improved lubricating apparatus for lubricating the slide valves and cylinders of steam engines.	2558	23rd Sept. 1870	John Pardoe Ferris.
Rasps and files - - - - - - (*drum or cylinder.*) (*Communicated by Ira Franklin Thompson.*)	2560	23rd Sept. 1870	William Robert Lake.
Machinery for decorticating and cleaning grain - (*polishing drum.*)	2569	26th Sept. 1870	David Johnson.
Modes of regulating the position of card rollers and other articles requiring accurate adjustment.	2575	28th Sept. 1870	Edward Lord.
Manufacture of sheet metal rollers or drums -	2585	29th Sept. 1870	James Hall. George Hall.
Working of locomotive engines - - - - - (*lubricating cylinders.*)	2612	1st Oct. 1870	Joseph Ward.
"Steamers" or cylinders employed in conjunction with cloth mills and gigs. - - -	2613	1st Oct. 1870	Benjamin Siddall. Joseph Siddall.
A new or improved self-acting lithographic and type printing press. (*construction of damping rollers.*)	2637	5th Oct. 1870	Charles Waddie.
Hollow rolls or cylinders attached to spindles -	2789	22nd Oct. 1870	Anthony Gapper Southby.
Construction of bowls or rollers used in calendering and other pressing or squeezing machinery.	2827	27th Oct. 1870	Robert Brewitt.
Improvements in presses for relief stamping or printing, and in reservoir ink or colour rollers for regulating the flow of ink or colour therefrom. (*reservoir ink and colour rollers.*)	2844	28th Oct. 1870	John Gough.
Ore-washing machines - - - - - (*perforated cylinder.*)	2859	31st Oct. 1870	Hesekiah Bradford.
Modes, means or apparatus for or connected with the manufacture of malleable iron or steel tubes and like structures. (*construction of the rollers.*)	2869	1st Nov. 1870	Andrew Ballantyne.
Road and other rollers - - -	3013	17th Nov. 1870	Robert Balls Hughes.
Machinery for cutting or shaping wood - - (*feed rollers, pressing rollers.*)	3029	18th Nov. 1870	Allen Ransome.
Application of concrete to structures and foundations for the same, also to cofferdams. (*forming hollow cylinders.*)	3039	21st Nov. 1870	James William Butler.
Bearings for carriage axles - - - - - (*rollers.*) (*Communicated by William Henry Downs and Jethro Pencille.*)	3058	22nd Nov. 1870	Alfred Vincent Newton.
Machinery for drilling or boring rocks and other mineral substances in mining, tunnelling, quarrying and other like operations. (*cylinder casing.*)	3131	29th Nov. 1870	Fenner Ballou Taylor.
Mechanism or apparatus to be employed for wringing and mangling woven fabrics. - - (*using pressure rollers of india-rubber.*)	3146	1st Dec. 1870	Silas Schofield. Alfred Schofield.
Machinery for combing cotton and other fibrous materials. (*roller.*)	3171	2nd Dec. 1870	George Little.
Apparatus for singeing piece goods - -	3289	15th Dec. 1870	James Worrall.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
CYLINDERS, &c.—*continued.*			
Improvements in machinery for stamping and breaking ores and separating the same from substances with which they may be combined, parts of which improvements are also applicable in the construction of steam hammers and steam-engines. - - - - - (*compound cylinders.*)	3357	23rd Dec. 1870	James Willoughby. William Willoughby. Joseph Willoughby. Samuel Willoughby.
An improved mode of opening out sheet-glass cylinders.	3382	28th Dec. 1870	William Windle Pilkington.
Machinery for manufacturing metal tubes - - (*bending rolls, feed rolls, &c.*) (*Communicated by Stephen Paschall Morris Tasker.*)	3391	29th Dec. 1870	William Robert Lake.
For engraving cylinders, *see* "ENGRAVING."			
DENTISTRY; ARTIFICIAL TEETH.			
Apparatus employed in the administration of nitrous oxide gas (or other gas that may be inhaled) for indicating the quantity at each and every inhalation. (*for use in dentistry.*)	860	24th March 1870	Sunderland Mawson.
Improvements in the mode of attaching mineral teeth to a plate or "back," which improvements also serve to strengthen the teeth.	1547	27th May 1870	Harry Rose.
Improvements in the preparation of artificial teeth and in the manufacture of mouth plates or supports therefor. (*Communicated by Josephus Brockway.*)	2892	2nd Nov. 1870	Urial King Mayo.
DISINFECTING, DEODORISING, PERFUMING.			
Treatment of night soil, sewage, urinous superphosphates, gas lime refuse and other refuse matters, for the purpose of deodorizing, of obtaining manure and of diluting acids with urinous mixtures.	67	8th Jan. 1870	William Henry Hughan.
Improvements in the treatment of sewage and in the production of manures. - - - (*deodorising.*)	607	2nd March 1870	David Forbes. Astley Paston Price.
Apparatus applicable to the treatment of towns' and domestic refuse for sanitary purposes. (*deodorising excreta.*)	630	3rd March 1870	James Conyers Morrell.
Effecting the decolorisation, deodorisation and purification of foul and waste waters of sewage and of supernatant sewage water.	713	10th March 1870	John James Lundy.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
DISINFECTING, &c.—*continued.*			
Improvements in the treatment of sewage and in the production of manures. - - -	1137	19th April 1870	David Forbes. Astley Paston Price.
Apparatus for receiving and treating sewage and other noxious matters.	1311	7th May 1870	Robert Weare.
Improvements in deodorizing and purifying sewage and in making manure therefrom.	1354	12th May 1870	George William Wigner.
An improved disinfecting and cleansing powder or saponaceous compound, and vessel to contain the same.	1586	31st May 1870	Segismund Cohné.
Improvements in the treatment of sewage and in obtaining manures or fertilizing substances therefrom.	1949	9th July 1870	Peter Spence.
Improvements in utilizing and deodorizing sewage matters of dwelling houses and other places, and in apparatus to be used in connection with the same.	2047	20th July 1870	John Hughes Lloyd.
Apparatus for disinfecting, purifying and drying, and also for cooking by heated air.	2194	6th Aug. 1870	Sigismund Leoni.
An improved mode of treating or preparing clay, lime, chalk and other matters with carbolic acid to produce a disinfectant and an insect or vermin repeller, and in apparatus for that purpose. (*Communicated by Charles Howard Jackson.*)	2269	16th Aug. 1870	Henry Bradley.
Improvements in treating and purifying animal and vegetable fats and oils and in apparatus connected therewith. (*injecting purifying agents.*)	2281	18th Aug. 1870	James John Shedlock.
Purifying, deodorizing and utilizing sewage and other refuse and deleterious matters, and for machinery therein employed.	2297	20th Aug. 1870	Joseph Judge Hays.
" Dry " closets, commodes, urinals and other receptacles for putrescible matter.	2398	2nd Sept. 1870	John Ward Girdlestone.
Means employed for the purification of water -	2516	19th Sept. 1870	Gustav Bischof, junior.
Deodorization and utilization of sewage or other feculent or putrescent matter, whether in a solid, fluid or semifluid state. - - -	2534	21st Sept. 1870	Ferrar Fenton. Samuel Hollins.
An improved steam-washing disinfecting and delivering machine.	2722	15th Oct. 1870	Joseph Flower Hart.
Apparatus for heating liquids and for producing a constant circulation of the same therein. (*for deodorising buildings.*)	2778	21st Oct. 1870	John Stephens.
Treating and deodorizing sewage - -	2838	28th Oct. 1870	Joseph Judge Hays.
Apparatus for effecting and regulating the supply of the deodorizing material in earth closets. (*Communicated by William R. C. Clark and James E. Aiken.*)	2951	9th Nov. 1870	William Robert Lake.
An improved apparatus for a deodoriser for water-closets.	2999	16th Nov. 1870	John Henry Spencer.
Improvements in deodorizing and treating sewage and in apparatus to be employed for this purpose. - - - -	3107	26th Nov. 1870	Amos Bryant. Samuel Hall Culley.
Improvements in the manufacture of deodorizing and disinfecting compounds and in the treatment of sewage and impure waters, and in closets and apparatus for the treatment of sewage.	3167	2nd Dec. 1870	Fritz Hillé.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
DISINFECTING, &c.—*continued.*			
Treatment of sewage and the preparation of materials to be used for its purification.	3169	2nd Dec. 1870	Henry Young Darracott Scott.
Improvements in medicating cotton and other fibres for sanitary and surgical purposes, and in machinery employed therein. - - - (*as disinfectants, deodorisers and antiseptics.*)	3367	24th Dec. 1870	John Gamgee. William Henry Maitland.
Improvements in deodorising and purifying sewage, urine and refuse matters and liquids, and in making manure therefrom, and in apparatus for those purposes. - - - -	3399	30th Dec. 1870	Christopher Rawson. Philip Ovenden. James Wylde. William McCree. Henry Hill.
DISTILLING AND RECTIFYING.			
I.—Alcoholic Distillation, Manufacture of Spirituous Liquors.			
Treatment of certain substances for food and for manure. (*liquid refuse of grain.*)	260	28th Jan. 1870	James Dewar.
Refrigerating for the manufacture of ice and other purposes. (*for distillers.*)	267	29th Jan. 1870	Henry Joseph West.
Improvements in fire-places for generating steam and in other furnaces where great heat is required. - - - - - (*for distillers.*)	387	9th Feb. 1870	John Martin Stanley. William Atkins.
Machinery or apparatus for pressing spent hops, grains, beetroot or other substances used in the processes of brewing and distilling, to extract liquor or moisture therefrom. - -	389	10th Feb. 1870	Charles Pontifex. Frederick Pontifex. Anthony Sherwood.
Subdividing particles of water and other fluids and applying the same to sanitary and other purposes. - - - - - (*for discharging wash into a stratum of hot air.*)	596	1st March 1870	Marmaduke Wilkin. John Clark. Adam Scott.
Apparatus for distilling - - -	717	10th March 1870	Joseph Wallace.
Improved apparatus for filling glass bottles and jars with soups, jellies, fruits and other edibles for the purpose of preserving them, the said apparatus being also applicable for filling bottles with sauces, wines, spirits, beer, liqueurs, and other still and effervescing beverages, also machinery in combination with the above apparatus for corking or stoppering such said bottles and jars.	989	5th April 1870	James Winter, the younger.
An improved method of and apparatus for securing and measuring liquids.	1117	16th April 1870	Nicholas Murphey.
Treatment of maize - - - - - (*producing alcohol.*) (*Communicated by H. Cavayé and Company.*)	1288	5th May 1870	John Henry Johnson.
Distilling alcoholic liquors - - -	1801	24th June 1870	Silvanus Frederick Van Choate.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
DISTILLING, &c.— *continued.*			
Improvements in apparatus for cooling liquids, which improvements are also applicable to distillation and surface condensation.	1814	27th June 1870	Robert Morton.
Certain improvements in the manufacture of cordials	1942	8th July 1870	William Gray Jackson.
Mechanical arrangements for cooling and heating liquids and other substances.	1994	14th July 1870	Henry Wilson.
Improvements in distilling and rectifying and in apparatus employed therefor.	2122	28th July 1870	Evariste Vignier.
Drying apparatus for drying agricultural, animal and chemical and commercial products.	2145	1st Aug. 1870	William Alfred Gibbs.
An improved method of and apparatus for refining and ageing liquors. (*Communicated by Samuel H. Gilman.*)	2167	3rd Aug. 1870	William Robert Lake.
Multitubular apparatus for cooling or heating liquids for distillation and condensation.	2196	8th Aug. 1870	Robert Morton.
Improvements in the preparation of worts, whereby an improved yield is obtained with a residue suitable to be employed in the manufacture of paper, also in the employment of such residue, whether obtained in the preparation of worts or from other sources in the manufacture of paper. (*distillers' worts.*)	2231	11th Aug. 1870	Solomon Bennett.
Apparatus for cooling or refrigerating liquids (*for distillers.*)	2673	8th Oct. 1870	Adolphus Frankenberg.
Improvements in or connected with furnaces for boilers, evaporating vessels and stills.	2949	9th Nov. 1870	Nedrick Jarvie. William Miller. William Calderwood.
Cooling or freezing machines (*cooling must.*) (*Communicated by Eugene Dominique Nicolle and Thomas Sutcliffe Mort.*)	3210	6th Dec. 1870	William Mort.
Treating lichens or moss in order to obtain sugar or saccharine matter and spirit therefrom. (*Communicated by Henry Shield.*)	3250	12th Dec. 1870	John Clayton Mewburn.
Furnaces (*for stills.*) (*Communicated by Carl Wittenstrom.*)	3292	16th Dec. 1870	John Donald.
For distilling water, *see* "FILTERING."			
II.—Bituminous, Resinous and Oleaginous Distillation.			
Obtaining products from mineral and vegetable tars and from certain of their distillates and residues. (*distilling under pressure.*)	50	6th Jan. 1870	George Shand.
Improvements in the manufacture of gas, and in obtaining residual products from such manufacture, and in apparatus to be used in such manufacture. (*distilling gas liquor.*)	510	21st Feb. 1870	Frank Clarke Hills.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
DISTILLING, &c.—*continued.*			
An improved process for converting the whole product arising from the distillation of crude petroleum into a safe burning oil.	709	10th March 1870	Joseph Arno Tatro.
Improvements in apparatus for evaporating, concentrating and distilling liquids, and in recovering reagents from oil refiners and other bye products.	793	17th March 1870	Frederick Augustus Barrow.
Improvements in distilling crude mineral oils and in apparatus therefor.	795	17th March 1870	Edmund Richard Southby.
Treatment of mineral oils - - - -	944	31st March 1870	Robert Scott. William MacIvor.
The application of a new material to the production of illuminating oils and solid hydrocarbons suitable for the manufacture of candles and for other purposes. - - - -	961	2nd April 1870	Frederick Field. Gustav Siemssen.
A new or improved process for dissolving or reducing crude or manufactured indian rubber. (*recovering camphor by distillation.*)	982	4th April 1870	William Newton MacCartney.
Making the carbonates of ammonia - -	1006	6th April 1870	Isham Baggs.
A new or improved metal founders' blacking -	1090	13th April 1870	Frederick Pattison.
A process for the recovery, purification and revivification of sulphuric acid spent and deteriorated in the refining of petroleum, coal and shale oils. (*Communicated by Michael Barrett, M.D.*)	1394	16th May 1870	George Willoughby Hemans.
Improvements in producing light from heavy hydrocarbons and in apparatus for that purpose. (*Communicated by Rufus Spaulding Merrill.*)	1660	8th June 1870	John Henry Johnson.
Improvements in treating and distilling petroleum and in apparatus employed therein. (*Communicated by James Laws Heverin and James Lloyd Bewley.*)	1823	27th June 1870	Robert Kell.
Distilling oils - - - - -	1871	1st July 1870	James Anderson McIntosh
Improvements in the manufacture of oil and in the machinery or apparatus to be employed therein.	2320	23rd Aug. 1870	James Lloyd.
Improvements in apparatus for producing inflammable gas from mineral and other oils, parts of which are applicable for heating purposes. -	2354	27th Aug. 1870	Thomas Clayton. William Henry Bailey.
Improvements in distilling mineral oils and in apparatus therefor.	2435	8th Sept. 1870	Edmund Richard Southby.
Continuous distilling apparatus for distilling petroleum and other kinds of oils. (*Communicated by Henry Francis Howell.*)	2458	12th Sept. 1870	Thomas Harvey.
Manufacture of hydrocarbon oils made from petroleum, bituminous coals, shales, schists and other bituminous substances. (*Communicated by Joshua Merrill.*)	2544	22nd Sept. 1870	George Tomlinson Bousfield.
Improvements in the destructive distillation at comparatively low temperatures of solid bituminous substances, such as bituminous coals, shales or schists, and in apparatus therefor.	2555	23rd Sept. 1870	David Watson.
Purifying hydrocarbon and rosin oils - -	2875	1st Nov. 1870	Arthur Charles Sterry. John Sterry.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
DISTILLING, &c.—*continued.*			
Construction of apparatus for concentrating sulphuric acid. (*constructing the stills or alembics.*)	2975	12th Nov. 1870	Auguste Ferdinand De Hemptinne.
Manufacture of rosin oil - - (*Communicated by Joshua Merrill.*)	3182	3rd Dec. 1870	George Tomlinson Bousfield.
See also "GAS."			
DOCKS, HARBOURS, BREAKWATERS, PIERS, LANDING-STAGES, CANALS, SEA-WALLS, SUBMARINE WORKS, WEIRS.			
Ports, harbours and landing stages - -	589	28th Feb. 1870	Robert Richardson.
Construction of ships and other vessels - - (*applicable to floating piers, &c.*)	674	7th March 1870	Frederick Wilkins.
An improved method of and apparatus for executing submarine constructions. (*Communicated by Francois Durand.*)	688	8th March 1870	William Robert Lake.
Construction of piers, jetties and similar structures (*Communicated by Charles Richard.*)	729	11th March 1870	Michael Henry.
Improved means for rendering water-tight dock gates, ships' ports or other like openings, also applicable to windows, doors and other like openings.	912	29th March 1870	Robert Saunders.
An improved machine for drilling or boring rocks, chiefly designed for working mines, tunnels and quarries, and for submarine operations. (*Communicated by James Asbury McKean.*)	1104	14th April 1870	William Robert Lake.
Machinery or apparatus for tilling, ploughing, harrowing, digging and cultivating land. (*digging canals.*)	1263	3rd May 1870	Henry Belmont.
Method of constructing piers, breakwaters, wharfs, cofferdams, river and sea walls, and other works in water.	1296	6th May 1870	Edwin Clark.
Apparatus to be used in subaqueous operations -	1407	16th May 1870	Thomas Page.
Piles for engineering purposes - - (*Communicated by Thomas W. H. Moseley and Frederick Allen Leigh.*)	1498	24th May 1870	Evan Leigh.
Improvements in machinery and in the means employed in connection therewith for raising sunken ships and other submerged bodies, and for conducting other submarine operations.	1680	10th June 1870	Joseph Thomas Parlour.
Breakwaters and structures for coast protection -	1804	25th June 1870	Robert Saunders.
An improved method of incorporating metal and cement in the construction of tanks, boxes, vases or pots for horticultural and other purposes, water and other pipes and conduits, artificial ponds, reservoirs, basins and rivulets, embankments of watercourses and analogous works. (*Communicated by Joseph Monier.*)	1999	15th July 1870	William Edward Gedge.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Docks, &c.—*continued.*			
Dredging machines - - - - (*for forming canals.*)	2087	25th July 1870	Jean Baptiste Ernest Defontaine.
Constructing cylindrical or columnar piers or foundations.	2255	13th Aug. 1870	John Milroy.
Improvements in tunnelling and in machinery and apparatus therefor. (*Communicated by William Sykes.*)	2353	27th Aug. 1870	Herbert John Haddan.
Improvements in the construction of piers, jetties, docks and other similar structures, and in apparatus employed therein. (*Communicated by Charles Richard.*)	2412	5th Sept. 1870	Michael Henry.
Improvements in caissons and bridges to bridge across the entrances to graving docks, harbours, rivers or estuaries.	2444	9th Sept. 1870	Walter Robert Kinipple.
Machinery and apparatus for transporting passengers, goods and other articles. (*floating platform, &c.*) (*Communicated by Myles Cooper.*)	2624	3rd Oct. 1870	Leonard Cooper.
Improved movable weirs worked by self-acting means.	2995	16th Nov. 1870	William Martin.
Application of concrete to structures and foundations for the same, also to coffer dams. (*piers, sea walls, groins, &c.*)	3039	21st Nov. 1870	James William Butler.
Construction of breakwaters, sea-walls, piers, jetties and other similar constructions. - -	3220	8th Dec. 1870	William Jackson. Thomas Gardner Wilson.
Formation of concrete works - - - (*marine defences, breakwaters and piers.*)	3398	30th Dec. 1870	Phillip Brannon.
Doors and Gates ; Door Furniture.			
Apparatus for hinging, adjusting and fastening gas retort lids, covers or doors and other lids, covers and doors.	3	1st Jan. 1870	Stephen Holman.
Method of and apparatus for fastening and unfastening the doors of railway carriages.	49	6th Jan. 1870	John Michels.
Improvements in shutters and blinds for windows, doorways and other apertures, and in the means for adjusting the same.	91	12th Jan. 1870	Frederick Hartt Knevitt.
An improved means or method of exhibiting names, photographs, views, designs or sketches in monuments, door or other knobs, boxes, walking sticks, umbrellas and various other articles. -	112	13th Jan. 1870	Joseph Wright. Joseph Cryer. Edwin Rhodes.
Ornamenting surfaces - - - -	137	17th Jan. 1870	Frederick Samuel Lines.
An improved spindle for door handles - -	408	11th Feb. 1870	James Thompson.
An improved bolt or fastening applicable to doors and windows and other similar purposes.	428	14th Feb. 1870	Edward Wyburd Furrell.
Manufacture of washable papers - - - (*for door panels.*)	799	17th March 1870	Charles Hermann Rost.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
DOORS, &c.—*continued.*			
Locomotive and other steam boilers having fire-boxes. (*joint round the fire door.*)	801	18th March 1870	Stanhope Perkins.
Apparatus for securing the doors of railway carriages and preventing the opening of the same while the train is in motion.	826	19th March 1870	Charles James Hislop Warden.
Improvements in locks, latches, or bolts for fastening the doors of railway carriages, which improvements are also applicable to other purposes.	877	25th March 1870	William Rogers Thomson.
Improved means for fastening and securing the doors of railway carriages and other doors.	879	25th March 1870	Robert Frederick Muller Harcourt.
Apparatus for locking and unlocking gates on railways.	903	28th March 1870	Silas Paul Baker.
Improved means for rendering watertight dock gates, ships' ports or other like openings, also applicable to windows, doors and other like openings.	912	29th March 1870	Robert Saunders.
Means or arrangements for the safety and convenience of railway passengers. (*bolting the carriage doors.*)	963	2nd April 1870	Joseph Chrimes.
Ornamenting wood, leather and other materials for the manufacture of fancy boxes, furniture panellings, and for other ornamental purposes. (*door panelling.*)	1058	11th April 1870	Archibald Brown.
Spring hinges - - - - (*for doors.*)	1060	11th April 1870	Robert Adams.
Attaching door and other knobs to their spindles -	1077	12th April 1870	Benjamin Baugh. Benjamin Walters.
Reversible butt hinges - - - (*for doors.*) (*Communicated by George Albert Lloyd and Joseph Wesley Stow.*)	1154	20th April 1870	William Robert Lake.
Improvements in attaching door and other knobs and handles to spindles, and in the manufacture of door and other knobs and handles, parts of which improvements may be applied to the manufacture of the terminal ornaments of metallic furniture and other articles.	1232	29th April 1870	Ernest Wentworth Buller.
Fastenings for windows, doors and other similar purposes. - - - -	1346	11th May 1870	Joseph Nicholson. John Ward Jones.
Improvements in the manufacture of welded iron or steel tubes, and in the means or apparatus employed in such manufacture. (*for ornamental gates.*)	1435	18th May 1870	Edward Peyton.
Improved means or apparatus for admitting and regulating the supply of air to steam-boiler and other furnaces. - - - - (*construction of furnace door.*)	1446	19th May 1870	John Addy Hopkinson. Joseph Hopkinson, jun.
Hinges - - - - (*for doors.*)	1630	6th June 1870	William McLean.
Improved means of protecting shop fronts, windows, doors and other parts of buildings or structures.	1648	7th June 1870	Frederick Schäfer.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Doors, &c.—*continued.*			
Improvements in the manufacture of artificial stone and in articles composed thereof. (*panels.*)	1822	27th June 1870	William Bennet Adamson.
Eliptical clip adjustments of door springs or hinges.	1833	28th June 1870	Douglas Mole.
Manufacture of certain ornamental and useful articles, such as buttons, studs, or other attachments for dress, knobs for doors and drawers, chair nails, harness mounts, and for various other purposes analogous to these. - -	1902	5th July 1870	John William Hoffman. Frederic Arthur Harrison.
Improving latches, locks, bolts, fastenings in general, but more especially the fastenings of doors, and particularly the fastenings of railway carriage doors.	1966	14th July 1870	James William Ayres.
Door fastenings - - - -	2054	20th July 1870	David Jones.
Apparatus or machinery for raising and lowering revolving shutters. - - - (*and railway shed doors.*)	2113	27th July 1870	Thomas K rby. Richard Brady. William Batiso.i Kirby.
Improved mechanism for locking or securely connecting the doors of safes, strong rooms and other like depositories to the frames thereof.	2132	29th July 1870	Henry Royall Minns.
Improvements in turn-buckles, and in securing door knobs or handles and turn-buckles to their spindles.	2146	1st Aug. 1870	Francis James Barnby.
Apparatus for regulating the supply of air to furnaces.	2227	11th Aug. 1870	Thomas Symes Prideaux.
Locks for railway and other carriages - -	2249	12th Aug. 1870	John Matthias Hart.
Certain improvements in fastenings for doors -	2251	12th Aug. 1870	Philip Waters.
Letter boxes and bags for receiving and containing letters - - - - (*acting as a substitute for the knocker.*)	2448	10th Sept. 1870	Henry Tristram. Edward Greene Leeman.
Spring hinges - - - - (*for doors.*)	2640	5th Oct. 1870	Douglas Mole.
Improved locks or fasteners for doors, gates, boxes and other similar purposes.	2785	22nd Oct. 1870	Abel Edgar Samels.
Improvements in the construction of metal gates, applicable also to tie rod couplings, hinges for shop-blind arms and other useful purposes.	2878	1st Nov. 1870	Stephen Tuddenham.
Improved methods of and apparatus for utilising the waste and spare or live steam, waste and spare heat and waste and spare momentum of locomotive and other steam engines. (*furnace doors.*)	2906	3rd Nov. 1870	Thomas Arthur Dillon.
Window, door and table fastener - -	3168	2nd Dec. 1870	Julius Augustus Faulkner. James Henry Starling.
Wardrobe and such like latches and parts connected therewith.	3277	14th Dec. 1870	George Bilbrough.
Apparatus for regulating the motion and action of door springs.	3309	19th Dec. 1870	Alexander Charles Moffatt.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
DOORS, &c.—*continued.*			
An improved weather strip or draught excluder for doors and windows.	3345	21st Dec. 1870	William Cook.
Improvements in furnace doors and in apparatus connected therewith.	3383	28th Dec. 1870	David Auld, the younger.
An improved construction of fastening for doors -	3403	31st Dec. 1870	James William Ayres.
DRAINS, SEWERS, GUTTERS; DRAIN PIPES AND TILES; DRAINING; STENCH TRAPS; SINKS.			
Improvements in and connected with waterclosets and other sanitary appliances. (*applicable to sinks.*)	577	26th Feb. 1870	John Randall Mann.
Machinery for propelling vessels and aërial machines by reaction, parts of which are applicable to forcing fluids for other purposes. (*bilge pumps.*)	623	3rd March 1870	Richard Boyman Boyman.
Apparatus for raising and forcing fluids and for cleaning suction strainers by steam. (*applicable to bilge pumps.*) (*Communicated by Alexander Friedmann.*)	779	16th March 1870	John Clayton Mewburn.
An improved machine for forming trenches or ditches. (*Communicated by Henry Carter.*)	781	16th March 1870	William Robert Lake.
Machinery or apparatus for tilling, ploughing, harrowing, digging and cultivating land. (*draining.*)	1263	3rd May 1870	Henry Belmont.
A new or improved drain pipe rest and subsoil drain.	1306	7th May 1870	Henry Brooke.
Sawing machinery - - - - (*forming spouts or troughing for dwellings.*)	1398	16th May 1870	Thomas Fawcett.
Motive-power engines - - - - (*mine pumping engines.*)	1504	24th May 1870	John Yule.
Improvements in the manufacture of artificial stone and in articles composed thereof. (*sinks.*)	1822	27th June 1870	William Bennet Adamson.
Machinery for moulding clay and other plastic materials into drain pipes and other articles. (*Communicated by Philip Syng Justice.*)	2000	15th July 1870	Henry Woodcroft Hammond.
Improvements in utilizing and deodorizing sewage matters of dwelling houses and other places and in apparatus to be used in connection with the same.	2047	20th July 1870	John Hughes Lloyd.
Wood paving with or without rails - - (*formation of gutters.*) (*Communicated by Samuel Norris.*)	2509	17th Sept. 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
DRAINS, &c.—*continued.*			
Improvements in the construction of drain pipes and in the mode of obtaining access thereto for forming connections therewith or for cleansing or examining the same.	2570	26th Sept. 1870	Herbert John Jones.
Motive-power engines - - - - - (*for pumping mines.*)	2619	1st Oct. 1870	John Yule.
Ventilating sewers by apparatus adapted for that purpose.	3060	23rd Nov. 1870	William Richard Pook.
Traps to drains and other places - - -	3079	24th Nov. 1870	William Nunn.
An automatic ventilator, alarm and pump for vessels. (*removing bilge water.*) (*Communicated by William Fitz James Thiers, P. D. Rodney and Edward Parkman.*)	3117	28th Nov. 1870	Benjamin Joseph Barnard Mills.
Treatment of sewage and the preparation of materials to be used for its purification.	3169	2nd Dec. 1870	Henry Young Darracott Scott.
DRAMATIC ANDS CENIC EFFECTS, ILLUSORY EXHIBITIONS, STAGE LIGHTS.			
Improved apparatus for using the lime light for theatrical representations and other purposes.	643	4th March 1870	Edward John Cowling Welch.
Improved apparatus to be employed in the performance of gymnastic exercises. (*for stage performances.*) (*Communicated by William Hanlon.*)	1114	16th April 1870	Henry Edward Newton.
Improved means of exhibiting in the open air advertisements, photographic views, portraits or pictures, and also for decorating the fronts of theatres and other buildings.	2202	8th Aug. 1870	Jean Marie Auguste Lacomme.
DRYING, EXPRESSING MOISTURE.			
An improved process for preserving bread in a reduced bulk. (*Communicated by Jean Joseph Auguste Mouriés.*)	184	21st Jan. 1870	William Edward Gedge.
Hydro-extractors - - - - - -	290	1st Feb. 1870	Thomas Markland.
Preparing and drying yeast - - -	358	8th Feb. 1870	John Ward. John Bowing.
Improvements in machinery or apparatus for washing or scouring and drying wool and other fibrous materials and yarns or threads.	386	9th Feb. 1870	John Petrie, junior.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
DRYING, &c.—*continued.*			
Machinery or apparatus for pressing spent hops, grains, beetroot or other substances used in the processes of brewing and distilling to extract liquor or moisture therefrom. - -	389	10th Feb. 1870	Charles Pontifex. Frederick Pontifex. Anthony Sherwood.
Machinery or apparatus for dressing warps of wool or other fibrous substances and twine. - - (*and drying.*)	392	10th Feb. 1870	William Houghton. John Bapty.
Apparatus for drying sugar - - - (*Communicated by Alexander Herbst.*)	415	11th Feb. 1870	William Robert Lake.
Machinery or apparatus for drying woven fabrics and yarns or threads, and for "ageing" woven fabrics.	527	23rd Feb. 1870	James Farmer.
Improvements in or applicable to centrifugal drying machines or hydro-extractors.	679	8th March 1870	George William Wigner.
Stoves for drying bricks and other articles in pottery.	735	12th March 1870	James Dunnachie.
Improvements in kilns or apparatus for drying malt. (*Communicated by Robert Overbeck.*)	769	15th March 1870	William Edward Newton.
Machinery and apparatus for drying, clearing, smoothing, stretching and lustreing or glossing yarn or thread in the hank or skein.	843	22nd March 1870	William Gallimore.
Machinery or apparatus for compressing, forming and extracting moisture from peat, clay and other materials. (*Communicated by Thomas Ellis and William Alonzo Ellis.*)	896	26th March 1870	John Henry Johnson.
Improvements in the production of artificial fuel and in apparatus to be employed for such purpose. (*drying.*) (*Communicated by the Anthracite Fuel Manufacturing Company (Incorporated.*)	928	30th March 1870	John Henry Johnson.
Apparatus for drying grain, malt, roots, spent malt or hops, megass or spent sugar cane, wool and other substances.	966	2nd April 1870	Henry Jackson.
Machinery or apparatus to be employed for "filling" or starching woven fabrics made from cotton flax or other fibrous substances. (*and drying.*)	969	2nd April 1870	Thomas Lewis Livsey.
Construction of kilns - - - (*drying bricks, &c.*)	983	4th April 1870	James Wood Baker. George Worsnop. John Grainge.
An apparatus for the threefold purpose of curing or drying mealy and grainy stuffs, heating, cooling and mixing fluid substances, and condensing gaseous ones.	1139	19th April 1870	Melchior Nolden.
Improvements in kilns or ovens, and in apparatus employed therewith, chiefly designed for drying and burning bricks, tiles and ceramic ware.	1190	23rd April 1870	Augustus Morand.
Machinery or apparatus for washing and drying wool, yarn and other fibrous materials. -	1511	25th May 1870	John McNaught. William McNaught.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
DRYING, &c.—*continued.*			
Certain improvements in machinery or apparatus used in sizing and dressing yarn. (*mode of drying.*)	1575	30th May 1870	Colin Mather.
Improvements in desiccating sugar-cane refuse (known as megass, bagassa or trash), and in the apparatus or means employed therefor. - -	1628	4th June 1870	James Buchanan Mirrless. William Renny Watson.
An improved apparatus for mixing soils, chymical manures and other substances either separately or together, and for mixing dry with semi-fluid substances, liquids or air. (*removing superfluous moisture.*) (*Communicated by Frederick Tolhausen.*)	1701	14th June 1870	Henry Hammond.
An improved drying machine - - -	1850	29th June 1870	John Lightbody.
Improvements in drying malt, grain and other substances, and in the apparatus therefor. (*Communicated by Attilio R. Petracchi, Helem Merrill, Robert Heneage and Henry Spendelow.*)	1969	12th July 1870	Nicholas Constantine Maximos.
Process and apparatus employed for drying and roasting coffee, chicory, malt and other vegetable substances, also applicable to baking and desiccation generally.	1973	13th July 1870	John Ambrose Coffey.
Apparatus for pumping and forcing air and other fluids, and which apparatus is peculiarly applicable to desiccating the ventilation of mines, buildings, ships and other structures, and for blast and other purposes.	1976	13th July 1870	William Cowley.
Improvements in extracting water or other liquids from clothes or other fabrics or fibres, and in the machinery or apparatus employed therefor.	1996	14th July 1870	Thomas Halliday.
Improved means for drying substances impregnated with moisture.	2045	20th July 1870	Thomas Meredith Hopkins.
Drying apparatus for drying agricultural, animal and chemical and commercial products.	2145	1st Aug. 1870	William Alfred Gibbs.
Apparatus for disinfecting, purifying and drying and also for cooking by heated air.	2194	6th Aug. 1870	Sigismund Leoni.
Improvements in the manufacture of "spool" tubes and other tubes of paper, and in dyeing or coloring and marking the same, and in machinery or apparatus to be employed therefor.	2292	19th Aug. 1870	William Ambler.
Chimney tops and ventilators - - (*increasing air in hop drying.*)	2422	6th Sept. 1870	Thomas Murray Gladstone.
An improved screen-wire for dressing wheat and other grain, which web is also applicable to dressing sieves generally, and for the floors of malt and other drying kilns.	2429	8th Sept. 1870	William Silcock.
Apparatus suitable for scouring, washing, bleaching, dyeing and drying fibrous materials in the raw and manufactured state, and for like purposes. - - - -	2462	12th Sept. 1870	Thomas Nesham Kirkham. Vernon Francis Enson. George Spence.
Improved self-acting machinery for opening, smoothing, spreading and guiding calico cloth and other fabrics for the use of bleachers, dyers, calico printers and others. (*for drying.*)	2610	1st Oct. 1870	William Birch.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
DRYING, &c.—*continued.*			
Mode of training hops, the sockets for the poles or posts of same and other posts, applicable also for the boring for water. (*clothes drying posts.*) (*Communicated by Eduardo Blythe.*)	2705	13th Oct. 1870	David Munroe Childs.
Gas stoves for heating and warming rooms and for other like purposes. (*for drying.*)	2730	17th Oct. 1870	John Stalvies.
Machinery and apparatus for breaking nuts and separating the husks and shells from the kernels. (*and drying.*)	2741	18th Oct. 1870	William Mather.
Machinery or apparatus for washing, opening and drying wool and other fibrous materials and washing yarns. - - - - -	2772	21st Oct. 1870	John McNaught. William McNaught, junior.
Apparatus for heating liquids and for producing a constant circulation of the same therein. (*for drying chambers.*)	2778	21st Oct. 1870	John Stephens.
Centrifugal drying machines or hydro-extractors -	2886	2nd Nov. 1870	John Nathaniel Lessware.
Apparatus for drying and heating, amalgamating, moulding and compressing, more especially applicable to the manufacture of preserved coal.	2941	8th Nov. 1870	Henry Walker Wood.
Centrifugal machines - - - -	3015	17th Nov. 1870	Edmund Alfred Pontifex. John Barton.
An improved method of and apparatus for expelling volatile matters from peat.	3057	22nd Nov. 1870	Thomas George Walker.
Machinery, apparatus or means for heating, drying and finishing woven fabrics, drying yarns, fibrous materials and other similar substances. -	3163	2nd Dec. 1870	John Weems. William Weems.
An improved apparatus for mixing soils, chemical manures and other substances either separately or together, and for mixing dry with semi-fluid substances, liquids or air. (*and drying grain, bran, &c.*) (*Communicated by Frederick Tolhausen.*)	3213	7th Dec. 1870	Henry Hammond.
An improved device for securing clothes or other articles upon a rope or line. (*Communicated by Henry Austin Tweed.*)	3294	16th Dec. 1870	William Henry Chase.
Improvements in heating, drying and evaporating, and in apparatus to be used therein.	3364	24th Dec. 1870	Christopher Rawson. Philip Ovenden. William McCree.
Improvements in deodorizing and purifying sewage, urine and refuse matters and liquids, and in making manure therefrom, and in apparatus for those purposes. - - - (*drying the mud.*)	3399	30th Dec. 1870	Christopher Rawson. Philip Ovenden. James Wylde. William McCree. Henry Hill.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
DYEING TEXTILE FABRICS, YARNS AND MATERIALS; FIXING COLOURS; MORDANTS.			
Improvements in bleaching wool and silk, which improvements are applicable also for fixing blue colors. (*Communicated by Jean Baptiste Frezon, the elder.*)	75	10th Jan. 1870	John Henry Johnson.
Improvements in fire-places for generating steam and in other furnaces where great heat is required. - - - - - - (*for dyers.*)	387	9th Feb. 1870	John Martin Stanley. William Atkins.
An improved method or means of ornamenting woollen, calico and seal-skin cloths. - -	469	17th Feb. 1870	John Walmsley. Thomas Roberts.
A new method or methods for extracting and purifying mill waste, refuse flock material, and removing dyed colours and re-dying the same into other colours for re-manufacture, for using certain agents employed in the process and thereby making a manure.	530	23rd Feb. 1870	George Rydill.
Yarn holders - - - - - (*and dyeing yarn in cop form.*)	1162	21st April 1870	James Milton.
Apparatus to be used in dyeing yarns - -	1388	14th May 1870	Andrew Fisher, junior.
Machinery or apparatus employed in the process of bleaching, scouring, dyeing and sizing warps or yarns and fabrics. - - -	1548	27th May 1870	John Dargue. William Dargue.
Improved machinery for making ice and for other refrigerating purposes. (*for dye houses.*)	1579	30th May 1870	Leon Mignot.
An improved stop motion applicable to machinery or apparatus employed in bleaching, scouring, dyeing, sizing and dressing warps, yarns and fabrics, also in carding and combing wool or other fibrous substances. - - -	1654	8th June 1870	William Dewhirst. Thomas Dewhirst. Joseph Dewhirst.
Dyeing - - - - - -	1758	20th June 1870	Jean de Weweirne, the younger.
Mode of producing certain colors on cotton, linen and other textile fabrics.	1775	22nd June 1870	Ludwig Hamel.
Apparatus for dyeing or otherwise treating yarns -	1840	28th June 1870	Thomas Paterson Miller. David Miller.
Production of colors from aniline in dyeing and printing.	1863	30th June 1870	Robert Pinkney.
Manufacture of iron salts or compounds and in the purification of gas. (*obtaining a product useful in dyeing.*)	1952	9th July 1870	William Marriott.
Improved means of dyeing or coloring articles -	2082	23rd July 1870	Gaudente Sparagnapené.
Improvements in the manufacture of "spool" tubes and other tubes of paper, and in dyeing or colouring and marking the same, and in machinery or apparatus to be employed therefor.	2292	19th Aug. 1870	William Ambler.
Apparatus suitable for scouring, washing, bleaching, dyeing and drying fibrous materials in the raw and manufactured state, and for like purposes. - - - - - -	2462	12th Sept. 1870	Thomas Nesham Kirkham. Vernon Francis Ensoen. George Spence.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
DYEING, &c.—*continued.*			
Improved self-acting machinery for opening, smoothing, spreading and guiding calico, cloth and other fabrics for the use of bleachers, dyers, calico printers and others.	2610	1st Oct. 1870	William Birch.
Printing and dyeing textile fabrics and yarns -	2692	12th Oct. 1870	John Lightfoot.
An improved mode of colouring india-rubber and other like waterproof fabrics or materials.	2761	20th Oct. 1870	Alfred Ford.
Improved means or machinery for indigo-blue dyeing. - - - - - -	2874	1st Nov. 1870	Joshua Woodcock. James Coulter.
Improved means or machinery for indigo-blue dyeing. - - - - - -	3223	8th Dec. 1870	John Oldroyd. Mark Oldroyd, junior. Joshua Woodcock. James Coulter.
See also "DYES."			
DYES AND PRINTING-COLOURS.			
Preparing coloring matters - - - - (*manufacture of alizarine.*)	216	24th Jan. 1870	Richard Samuel Dale. Carl Schorlemmer.
Preparing and obtaining colouring matters -	376	9th Feb. 1870	Charles Bardy.
Dressing, stiffening or finishing and printing textile materials and fabrics and paper.	651	5th March 1870	James Strang.
Obtaining fibre suitable for making paper and a brown coloring matter.	1024	7th April 1870	Louis Abraham Brode.
An improved mode of preparing certain organic bases for producing colouring matters. -	1172	22nd April 1870	Charles Bardy. Lucien Dusart.
Production of prussiate of potash, prussiate of soda and prussian blue.	1186	23rd April 1870	Peter Spence.
Improvements in the manufacture of artificial alkaloids derived from coal tar and in the preparation of salts of the said alkaloids. (*aniline black.*)	1425	18th May 1870	John Casthelaz.
Production of colors from aniline in dyeing and printing.	1863	30th June 1870	Robert Pinkney.
Printing and dyeing textile fabrics and yarns - (*producing a black colour.*)	2692	12th Oct. 1870	John Lightfoot.
Manufacture of oil and other products of petroleum (*thickeners for printers' colours.*) (*Communicated by Charles Toppan.*)	2762	20th Oct. 1870	William Robert Lake.
Manufacture of prussiate of potash and prussian blue	3208	6th Dec. 1870	Peter Spence.
An improved process of eliminating the colouring matter of garancine and other products of madder. (*Communicated by Spencer Borden.*)	3274	14th Dec. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
EARTHENWARE AND PORCELAIN; POTTERY-KILNS; POTTERS' GLAZES; CERAMIC WARES; TERRA COTTA.			
An improved jug or pitcher - - -	400	10th Feb. 1870	Frank Theophilus Ferguson.
Enamels for pottery, earthenware and crockery - (*Communicated by Joseph Boes and Louis Esprit Joseph Gallibert.*)	618	2nd March 1870	John Henry Johnson.
A certain improvement in potters' glazes - -	665	7th March 1870	Edward Wood.
Stoves for drying bricks and other articles in pottery	735	12th March 1870	James Dunnachie.
Construction of kilns - - - - - (*for burning pottery.*)	983	4th April 1870	James Wood Baker. George Worsnop. John Grainge.
Improvements in kilns or ovens, and in apparatus employed therewith, chiefly designed for drying and burning bricks, tiles and ceramic ware.	1190	23rd April 1870	Augustus Morand.
Construction of ovens and kilns - -	1294	5th May 1870	William Brough, senior. William Brough, junior.
Construction of boxes or cases for containing eggs, glass, crockery or other articles requiring to be packed separately. (*Communicated by James McCree.*)	1786	23rd June 1870	William Spence.
Metallic jugs - - - - - - (*porcelain lining.*)	1851	29th June 1870	George Shadford Lee.
An improved method of incorporating metal and cement in the construction of tanks, boxes, vases or pots for horticultural and other purposes, water and other pipes and conduits, artificial ponds, reservoirs, basins and rivulets, embankments of watercourses and analogous works. (*Communicated by Joseph Monier.*)	1999	15th July 1870	William Edward Gedge.
Apparatus to be employed in the preparation of pulverized clay used in the manufacture of tiles, bricks, pottery and other articles of earthenware or china.	2005	15th July 1870	Arthur Maw.
Improvements in the manufacture of certain articles in pottery, and in the machinery or apparatus employed therefor.	2374	30th Aug. 1870	Frederic Grosvenor.
Apparatus for shaping plastic materials - - (*earthenware bottles.*)	2724	15th Oct. 1870	William Fullarton Murray. Thomas Duncan McFarland.
Manufacture of machines for mincing and cutting animal and vegetable substances. - -	2807	25th Oct. 1870	Frederick William Follows. John Bate.
Machinery for grinding, particularly applicable for grinding gold and other expensive colors used by potters and others. - - -	2894	3rd Nov. 1870	Richard Bewley, junior. Isaac Cotton.
The utilization of waste materials used in the manufacture of earthenware in the manufacture of artificial manure.	3368	24th Dec. 1870	William Holdcroft.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ELECTRICITY, GALVANISM AND MAGNETISM, AND THEIR APPLICATION.			
Improvements in electro-magnets and the application of the same for obtaining motive-power. (*Communicated by Henry Monroe Paine and Mahlon Smith Frost.*)	17	3rd Jan. 1870	William Edward Newton.
An improved apparatus for self-registering and checking the money taken for admissions to public entertainments and other places where a check on money taking is desirable. (*electrical counting and registering.*)	178	20th Jan. 1870	Charles Alexander Calvert.
An improved electro-motor for sewing machines - (*Communicated by Gustave Henry Dervieu.*)	207	22nd Jan. 1870	Alexander Melville Clark.
Apparatus for taking and registering votes -	257	28th Jan. 1870	John Coope Haddan.
Effecting the electro deposition of nickel - -	303	2nd Feb. 1870	Isaac Adams, junior.
Improved means or apparatus for controlling and guiding the movements of torpedo boats, rams and other similar vessels. (*by currents of electricity.*) (*Communicated by John Archibald Ballard.*)	382	9th Feb. 1870	Thomas James Smith.
Manufacture of copper tubes and also of copper rollers for calico printing, embossing and similar uses. (*by electro-deposition.*)	554	24th Feb. 1870	James Balleny Elkington. Charles Edwin Ryder.
An improved apparatus for producing rotary motion	615	2nd March 1870	Charles Ernest de Lorière.
Galvanic cells and batteries - - - -	1055	9th April 1870	Lionel Weber.
Treatment of metal surfaces coated by electro deposition with nickel.	1068	12th April 1870	Isaac Adams, junior.
Mode of and apparatus for working railway signals	1268	3rd May 1870	William Henry Preece. William Edward Langdon.
Improvements in applying electricity or electro magnetism on board ships in order to prevent incrustation or fouling of their bottoms and the deviation of their compasses and to produce electric light.	1347	11th May 1870	Charles Weightman Harrison.
An improved electro-magnetic engine - -	1364	13th May 1870	William Daniell. Hardaker Lund.
Magneto-electric telegraphic apparatus - -	1445	19th May 1870	Geminiano Zanni.
An electro magnetic motor for sewing and other machines. - - - - - -	1555	27th May 1870	George Stevens. Joshua Hendy.
Electro-magnetic engines - - - -	1576	30th May 1870	John Fletcher Wiles.
A new or improved electro-magnetic apparatus for moving panoramas, advertisements or other things required to be exhibited. (*Communicated by Louis Finger.*)	1584	31st May 1870	Bristow Hunt.
Printing telegraph apparatus - - - (*Communicated by Elisha Whittelsey Andrews, George Baker Field.*)	1657	8th June 1870	William Robert Lake.
Magneto-electric machines - - - -	1668	9th June 1870	Zenobe Theophile Gramme. Eardley Louis Charles D'Ivernois.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ELECTRICITY, &c.—*continued.*			
An improved anti-hemorrhoidal apparatus or anti-hemorrhoidal plate. (*magnetic plate.*)	1710	15th June 1870	François Dupuy.
An improvement in the means for producing electric light.	1917	7th July 1870	Eardley Louis Charles D'Ivernois.
Electric clockwork - - - - - (*Communicated by Edouard Bonhomme and Charles Ferdinand Mildé.*)	2339	25th Aug. 1870	William Edward Newton.
Manufacture of tacks and nails - - - (*electro-plating.*) (*Communicated by Howell Woodbridge Wright.*)	2359	27th Aug. 1870	William Robert Lake.
Means and apparatus employed for exploding submarine mines or torpedoes.	2369	29th Aug. 1870	Andrew Noble.
Weighing machines involving means for counting, registering, printing, adding and other operations connected with weighing scales. (*combining electro magnets.*)	2456	10th Sept. 1870	Henry Fairbanks.
An improved mode of and means for electro-plating the interior of lead and other metal tubes or pipes.	2491	15th Sept. 1870	Hamilton E. Towle.
Manufacture of wire for electric telegraph conductors (*from copper deposited by electricity.*)	2525	20th Sept. 1870	James Balleny Elkington.
Electro-magnets - - - - - (*Communicated by Elisha Whittlesey Andrews.*)	2578	28th Sept. 1870	William Robert Lake.
Improvements in the electro deposition of tin, which improvements are applicable to the prevention of the oxidation or tarnishing of silver surfaces and as a coating for other metals.	2580	28th Sept. 1870	John Edward Bingham.
Working of galvanic batteries - - - (*Communicated by Edwin Dodd McCracken, Henry Jotham Newton, Henry Burnham Kirkland and Joseph Roderick Husson.*)	2642	5th Oct. 1870	Alfred Vincent Newton.
Improvements on electro-dynamic apparatus for keeping off thieves. - - - -	2645	6th Oct. 1870	Dr. Otto Burg. August Schiebel.
Improvements in treating sewage and in the apparatus and means employed therein.	2653	6th Oct. 1870	Charles Felton Kirkman.
Certain improvements in mechanism or apparatus to be employed for simultaneously printing and delivering checks or tickets consecutively numbered or otherwise to persons entering places of amusement, riding in public vehicles, or for other purposes where checks are required as a means of detecting fraud. (*employing a galvanic battery.*)	2726	15th Oct. 1870	Richard Alphaeus Gooding.
Improvements in the manufacture of salt and in the apparatus employed therein. (*using galvanic currents.*) (*Communicated by J. R. Buchanan.*)	2782	21st Oct. 1870	William Edward Newton.
Improvements applicable to safes, vaults and other structures for containing valuable property and in alarm apparatus or telegraphs connected therewith. (*Communicated by Edwin Holmes and Henry Clay Roome.*)	2876	1st Nov. 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ELECTRICITY, &c.—*continued.*			
Penholders and pens - - - - - - (*producing an electric current.*)	2978	12th Nov. 1870	Isaac Jacobs.
An improved process of electro-plating iron and steel with gold or silver. (*Communicated by Alexander Lawe.*)	3005	16th Nov. 1870	George Haseltine.
Improvements in the construction of ordnance and in the mode of propelling projectiles, and also in the cartridges and ammunition used for that purpose. (*igniting the charge by electricity.*)	3130	29th Nov. 1870	Henry Bessemer.
Signalling on railways - - - - -	3203	6th Dec. 1870	Henry Arthur Dibbin.
Mode of and apparatus for igniting gas - - (*Communicated by Wilhelm Klinkerfues.*)	3228	8th Dec. 1870	William Lloyd Wise.
An improved electrical brake for railway carriages - (*Communicated by Joseph Olmstead.*)	3266	13th Dec. 1870	William Robert Lake.
Organs - - - - - - - -	3279	14th Dec. 1870	Charles Kenwrick Kenelm Bishop.
Portable sustaining voltaic batteries - -	3308	19th Dec. 1870	Desmond Gerald Fitz Gerald.
An improved process for coating iron, steel and other metals with electro-deposit of nickel or cobalt, or of both metals in combination.	3396	30th Dec. 1870	Ernst Daniel Nagel.
Improvements in deodorizing and purifying sewage, urine and refuse matters and liquids, and in making manure therefrom, and in apparatus for those purposes. - - - - - - (*using an electric current.*)	3399	30th Dec. 1870	Christopher Rawson. Philip Ovenden. James Wylde. William McCree. Henry Hill.
Preventing incrustation in and corrosion of steam-boilers and other vessels. (*use of voltaic action.*) (*Communicated by James Charles Adolphus Dick.*)	3402	31st Dec. 1870	Edward Primerose Howard Vaughan.
For electric telegraphs, *see* "TELEGRAPHS." For magnetic compasses, *see* "COMPASSES."			
EMBOSSING, PRODUCING RAISED PATTERNS.			
Manufacture of hats, caps and other coverings for the head. (*producing embossed patterns.*)	299	1st Feb. 1870	Charles Vero.
An improved method of producing surfaces by the aid of photography. (*gelatine reliefs.*)	346	7th Feb. 1870	Walter Bentley Woodbury.
Improved machinery for stamping and embossing -	447	16th Feb. 1870	Edwin William Knowles.
Manufacture of copper tubes and also of copper rollers for calico printing, embossing and similar uses. - - - - - -	554	24th Feb. 1870	James Balleny Elkington. Charles Edwin Ryder.
Methods of manufactures and combinations therewith of processes for producing pictorial, ornamental and other designs and devices. (*embossing, &c.*)	600	1st March 1870	Benjamin George George.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
EMBOSSING, &c.—*continued.*			
An improved method of etching relief-plates for surface printing. (*and embossing plates.*) (*Communicated by John McLoughlin and Edmund McLoughlin.*)	700	9th March 1870	William Robert Lake.
Machinery for etching or engraving cylinders used in printing and embossing. - - -	1033	8th April 1870	James Edmondson. William Edmondson. Frederick William Edmondson.
Production of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials.	1159	20th April 1870	George William Ley.
A new or improved system of grooves for rolling and shaping iron or other metals. (*forming patterns in projection.*) (*Communicated by Pierre Michel Sibut, senior.*)	1553	27th May 1870	William Edward Gedge.
Manufacture of embossed fabrics in imitation of quilting, and applicable especially to the making of ornamental petticoats.	1567	28th May 1870	Robert John Collins.
Machinery for engraving or etching rollers for calico printers. - - - - - (*and embossing fabrics.*)	1605	3rd June 1870	Robert Leake. Henry Larkin.
Production of raised pattern blocks applicable for surface printing and for other purposes.	2304	20th Aug. 1870	John Henry Banks.
Manufacture of casting blocks and printing blocks used for heliographic and other printing. - (*producing raised surfaces.*)	2464	13th Sept. 1870	George Baldock. Thomas George Denne. August Hentschel.
Stamping or embossing presses - - -	2556	23rd Sept. 1870	Charles Frederick Carter.
An improved apparatus for attaching stamps or labels to letters, envelopes and other documents, and for separating and embossing stamps and labels.	2665	8th Oct. 1870	Leopold Beral Bertram.
Improvements in or applicable to machinery or apparatus for cutting wood to any required pattern or design.	2671	8th Oct. 1870	William Ellis.
Improvements in presses for relief stamping or printing, and in reservoir ink or colour rollers for regulating the flow of ink or colour therefrom.	2844	28th Oct. 1870	John Gough.
Advertising and apparatus connected therewith - (*embossing.*)	2944	8th Nov. 1870	Henry Cyrus Symons.
Improvements in the manufacture of corrugated and embossed glass, and in the application of the same to the purposes of illumination. (*Communicated by Theodore Hyatt.*)	3112	28th Nov. 1870	John Henry Johnson.
Improvements in engraved or ornamented blocks or plates, in the mode or method of producing the same, and in the apparatus or mechanism employed therein, which apparatus is also applicable to other useful purposes. (*for embossing.*) (*Communicated by Claus Van Haagen.*)	3366	24th Dec. 1870	John Henry Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ENAMELLING, ENAMELS.			
Enamels for pottery, earthenware and crockery - (*Communicated by Joseph Boës and Louis Esprit Joseph Jallibert.*)	618	2nd March 1870	John Henry Johnson.
Improvements in enamelling stone and articles composed of burnt clay, and in the enamel to be employed therein.	712	10th March 1870	Thomas West Walker.
Improvements in photography by processes which combine printing, painting and transferring for the production of chromo-photographs. (*and for producing vitrified enamel chromo-photographs.*)	941	31st March 1870	William McCraw.
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation and preserving wood and other materials. (*obtaining a base for enamels.*)	986	4th April 1870	Achille Thomas Anquetil.
Producing engravings on glass, metals, wood and other substances. (*and enamelling.*)	1102	14th April 1870	Amédée Auguste Wilbaux.
Manufacture of mosaic plaques or slabs, suitable for external and internal decorations.	1744	17th June 1870	Colin Minton Campbell.
Improvements in the manufacture of artificial stone and in articles composed thereof. (*enamelling of the surfaces.*)	1822	27th June 1870	William Bennet Adamson.
Ventilating and heating rooms and other places and apparatus therefor. (*enamelling hollow grate backs.*)	2075	23rd July 1870	Richard Bailey.
Construction of illuminating and ventilating roofs and gratings or plates, parts of which are applicable to ordinary footways and carriage ways. (*enamelling gratings, &c.*) (*Communicated by Theodore Hyatt.*)	2755	20th Oct. 1870	John Henry Johnson.
An improved mode of producing a hard protective or ornamental covering or coating of compounds of india-rubber or gutta-percha upon metal and other surfaces. (*enamel.*) (*Communicated by George Temple Chapman.*)	2790	22nd Oct. 1870	William Robert Lake.
ENGRAVING AND ETCHING, PRODUCING SUNK DEVICES.			
Machinery for engine turning or engraving metallic or other surfaces. (*Communicated by Eugine Darier.*)	492	19th Feb. 1870	Ernest Hill.
An improved method of etching relief-plates for surface printing. (*Communicated by John McLoughlin and Edmund McLoughlin.*)	700	9th March 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ENGRAVING, &c.—*continued.*			
Machinery for etching or engraving cylinders used in printing and embossing.	1033	8th April 1870	James Edmondson. William Edmondson. Frederick William Edmondson.
Improved methods of forming patterns on the surface of kamptulicon or other similar substances used for floor coverings and mats. (*producing sunken-devices.*)	1097	14th April 1870	George Spencer.
Producing engravings on glass, metals, wood and other substances.	1102	14th April 1870	Amédée Auguste Wilbaux.
Production of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials.	1159	20th April 1870	George William Ley.
Machinery for etching or engraving rollers for calico printers.	1297	6th May 1870	Robert Leake.
A new or improved system of grooves for rolling and shaping iron or other metals. (*forming patterns in bas-relief.*) (*Communicated by Pierre Michel Sibut, senior.*)	1553	27th May 1870	William Edward Gedge.
Machinery for engraving or etching rollers for calico printers.	1605	3rd June 1870	Robert Leake. Henry Larkin.
Cutting, boring, grinding and pulverizing stone and other hard substances. (*engraving designs on hard substances.*) (*Communicated by Benjamin Chew Tilghman.*)	2147	1st Aug. 1870	Alfred Vincent Newton.
An improved method of producing surfaces by the aid of photography.	2171	4th Aug. 1870	Walter Bentley Woodbury.
Manufacture of casting blocks and printing blocks used for heliographic and other printing. (*producing intaglio surfaces.*)	2464	13th Sept. 1870	George Baldock. Thomas George Denne. August Heutschel.
Photo-mechanical printing	2485	15th Sept. 1870	Ernest Edwards.
Cutting, boring, grinding and pulverizing stone and other hard substances. (*or engraving.*) (*Communicated by Benjamin Chew Tilghman.*)	2900	3rd Nov. 1870	Alfred Vincent Newton.
Improvements in engraved or ornamented blocks or plates, in the mode or method of producing the same, and in the apparatus or mechanism employed therein, which apparatus is also applicable to other useful purposes. (*Communicated by Claus Van Haagen.*)	3366	24th Dec. 1870	John Henry Johnson.
ENVELOPES.			
Improved means of securing envelopes and their contents.	968	4th April 1870	Charles James Eyre.
Interlacing and interlaying of papers with thread and their application to the manufacture of envelopes and other purposes.	1932	7th July 1870	Richard Edwards.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ENVELOPES—*continued.*			
Pattern-post wrappers or envelopes - -	2708	14th Oct. 1870	Frederick Arnold.
An improvement in postal and other wrappers -	2887	2nd Nov. 1870	Thomas Brooks.
A wrapper for postal and other purposes - -	3227	8th Dec. 1870	William Parkins. Henry Gotto. Henry Gaisford Gotto.
EXCAVATING AND DREDGING; TUNNELS AND EMBANKMENTS.			
Plant or apparatus used for dredging purposes -	181	20th Jan. 1870	William Simons. Andrew Brown.
Improvements in apparatus and mechanical means for excavating, filling in, transporting, and discharging grain, seeds and other materials. (*raising "ooze," dredging ballast.*)	212	22nd Jan. 1870	John Holdsworth.
Improvements in the construction of ships or vessels and in bolts and nuts for fastening the parts together, also in the construction and employment of apparatus to be applied to such ships or vessels to assist in steering and propelling them through intricate channels. (*and ships used as dredgers.*)	237	26th Jan. 1870	Charles Lungley.
Subaqueous communications and apparatus for effecting the same.	403	11th Feb. 1870	John Imray.
Improvements in the mode of and in machinery for splitting rocks. (*Communicated by John Robb.*)	540	24th Feb. 1870	Edward Primerose Howard Vaughan.
Machinery for excavating coal, stone and other minerals, and for compressing air. - -	571	26th Feb. 1870	Samuel Firth. Frederick Hurd.
An improved method of and apparatus for executing submarine constructions. (*Communicated by François Durand.*)	688	8th March 1870	William Robert Lake.
Machinery for holeing, cutting or excavating coal or other minerals. - - - -	751	15th March 1870	Robert Winstanley, the younger. William Barker.
Pumps or apparatus for raising water and sand, mud or other disintegrated substances. (*for dredging.*) (*Communicated by Barton Howard Jenks.*)	907	28th March 1870	William Edward Newton.
An improved machine for drilling or boring rocks, chiefly designed for working mines, tunnels and quarries, and for submarine operations. (*Communicated by James Asbury McKean.*)	1104	14th April 1870	William Robert Lake.
Machinery or apparatus for tilling, ploughing, harrowing, digging and cultivating land. (*digging trenches.*)	1263	3rd May 1870	Henry Belmont.
Machinery for tilling or digging land and other earthworks.	1457	19th May 1870	Mathieu Giraud.
Ventilation of tunnels - - - -	1673	9th June 1870	John Dickinson Brunton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
EXCAVATING, &c.—*continued.*			
An improved method of incorporating metal and cement in the construction of tanks, boxes, vases or pots for horticultural and other purposes, water and other pipes and conduits, artificial ponds, reservoirs, basins and rivulets, embankments of water-courses and analogous works. (*Communicated by Joseph Monier.*)	1999	15th July 1870	William Edward Gedge.
Dredging machines - - - -	2067	25th July 1870	Jean Baptiste Ernest Defontaine.
Machinery for compressing air - - - (*for machines used in forming tunnels, &c.*) (*Communicated by Charles Burleigh.*)	2258	13th Aug. 1870	Thomas Brown.
Improved apparatus for boring in rock, coal, mineral, slate and other similar substances. - (*for tunnels.*) (*Communicated by Ferdinand Villepigue.*)	2316	23rd Aug. 1870	Martin Macdermott. Arthur David Williams.
Machinery or apparatus for tunnelling or forming galleries in mines, quarries and other places.	2349	26th Aug. 1870	Thomas Frederick Henley.
Improvements in tunnelling and in machinery and apparatus therefor. (*Communicated by William Sykes.*)	2353	27th Aug. 1870	Herbert John Haddan.
Machinery for cutting coal and other minerals -	2387	1st Sept. 1870	Wordsworth Donisthorpe. William Leatham. George Edmund Donisthorpe.
Girders to be used in bridges, subways, viaducts, railway works and every description of building and other structures.	2393	2nd Sept. 1870	Constantine Henderson.
Floating dredges or machinery for loosening, raising, transporting and depositing sand, gravel and mud. (*Communicated by James Burt.*)	2438	9th Sept. 1870	Thomas Burt.
Construction of tunnels and tubes - -	2543	22nd Sept. 1870	Thomas Barnabas Daft. Charles Edward Crawley.
Apparatus for shoreing or strutting earthworks, tunnels, shafts, buildings, and other structures.	2709	14th Oct. 1870	Giardinelli Spooner Kirkman.
Entrenching or digging tools - - -	2798	24th Oct. 1870	Jasper Henry Selwyn.
An improved mode of protecting troops under fire (*entrenching spade.*)	2860	31st Oct. 1870	William Shepard Wetmore.
Mode of and machinery for tunnelling, mining and coal cutting.	2927	5th Nov. 1870	William Low.
Machinery for drilling or boring rocks and other mineral substances in mining, tunnelling, quarrying and other like operations.	3131	29th Nov. 1870	Fenner Ballou Taylor.
Machinery for excavating and preparing peat -	3268	14th Dec. 1870	Frederick Ludewig Hahn Danchell.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
EXTRACTS AND DECOCTIONS.			
An improved method of extracting juices from plants, and of separating liquid or soluble matter from solids. (*Partly communicated by Julius Robert.*)	219	24th Jan. 1870	Ferdinand Kohn.
An improved mixture and preparation of coffee and tea.	2160	3rd Aug. 1870	James Spratt.
Improvements in the extraction of juice from sugar cane, and in apparatus employed therein. (*Communicated by Jean François Cail.*)	2212	9th Aug. 1870	John Henry Johnson.
An improved process for extracting the useful substance of hops, and for manufacturing a pure and concentrated extract of hops. (*Communicated by Charles Augustus Seely.*)	2943	8th Nov. 1870	William Edward Newton.
Vessels for making coffee, tea and other infusions -	3003	16th Nov. 1870	John Holmes Bass.
FABRICS; ELASTIC FABRICS.			
Certain improvements in the manufacture of counterpanes, quilts, quiltings, toiletings and other similar fabrics. - - - -	24	4th Jan. 1870	Thomas Nuttall. Richard Nuttall.
Machinery or apparatus for ornamenting or embroidering fabrics. - - -	140	17th Jan. 1870	Alfred Robert Gibbons. Anthony Umbach.
Improvements in ornamenting woven and felted fabrics, and in apparatus employed therein. - (*see* "CEMENTED FABRICS.")	210	22nd Jan. 1870	John William Eyres. John Longbottom.
An improvement in the manufacture of quilts, counterpanes, table or toilet covers and other similar fabrics. - - - - - (*see* "WEAVING.")	359	8th Feb. 1870	Henry Bond. Joseph Riley.
An improved method or means of ornamenting woollen, calico and seal-skin cloths - -	469	17th Feb. 1870	John Walmsley. Thomas Roberts.
Improvements in the manufacture of yarns and fabrics containing horse hair, and in means or methods for shaping and utilising fabrics containing the same or analogous stiffening material.	604	1st March 1870	Henry Hayward.
Manufacture of crape - - -	864	24th March 1870	Robert Henry Kay. Alfred Thomas Richardson.
Manufacture of quilts, toiletings and other figured fabrics. (*see* "WEAVING.")	1045	9th April 1870	William Nelson.
An improved process for cleaning wool or hair - (*and cleaning fabrics.*) (*Communicated by Charles F. A. Simonin and Edward W. Coffin.*)	1219	27th April 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FABRICS, &c.—*continued.*			
Manufacture of crape - - -	1220	28th April 1870	Robert Henry Kay. Alfred Thomas Richardson.
Improvements in textile fabrics for book covers and in weaving the same. - - -	1260	3rd May 1870	Alfred Barlow. Henry Browne.
Double pile fabrics - - - (*from cow hair yarns.*)	1302	6th May 1870	Samuel Cunliffe Lister. John Robinson.
An improved tool for cutting net lace and other like fabrics. - - -	1355	12th May 1870	Leon Octave Deschamps. Stanislas Delisse Oudit.
Manufacture of elastic fabrics suitable for gussets -	1369	13th May 1870	James Miller. James Miller, junior.
Manufacture of elastic fabrics - - -	1387	14th May 1870	Luke Turner.
Machines for and the manufacture of knitted goods.	1428	18th May 1870	David McColley Weston.
Manufacture of embossed fabrics in imitation of quilting, and applicable especially to the making of ornamental petticoats. (*see* "CEMENTED FABRICS.")	1567	28th May 1870	Robert John Collins.
Improvements in woven fabrics applicable for towelling and other purposes, and in the method of and apparatus for weaving the same.	1614	4th June 1870	William Haslam.
An improvement in towels, rubbers and wipers -	1678	10th June 1870	Henry Richardson Fanshawe.
Mode of manufacture of cloth - - - (*see* "SPINNING.")	1791	23rd June 1870	Robert Hudson.
Improvements in ornamenting paper, woven fabrics and other surfaces, and in apparatus employed therein.	1869	1st July 1870	Hubert Airy.
Interlacing and interlaying of papers with thread, and their application to the manufacture of envelopes and other purposes. (*substitute for canvass or cloth.*)	1932	7th July 1870	Richard Edwards.
Manufacture of elastic fabrics - - -	2072	22nd July 1870	Archibald Turner.
Manufacture of elastic fabrics - -	2272	16th Aug. 1870	Archibald Turner. Luke Turner.
Improvements in the manufacture of twilled fabrics, and in the application of such fabrics to the manufacture of various articles of wearing apparel, and for upholstery purposes.	2446	9th Sept. 1870	Joseph James Barnett.
Improvements in the manufacture of certain descriptions of fabrics, and in looms for weaving the same and other fabrics.	2465	13th Sept. 1870	Edward Lord.
Manufacture of "brattice cloths" used in coal and other mines.	2490	15th Sept. 1870	Illuis Augustus Timmis.
Machinery or apparatus for the manufacture of lint and lint bandages.	2539	22nd Sept. 1870	Samuel Shaw Brown.
Improvements in boxes and bearings for axles and other shafts, and in compositions to be applied thereto. (*cloth for lining axle boxes.*) (*Communicated by Eliza Dexter Murfey.*)	2879	1st Nov. 1870	John Henry Johnson.
An improved method of imparting elasticity to leather, skins, cotton, cloth and other similar or like articles.	2911	4th Nov. 1870	John Griffits.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FABRICS, &c.—*continued.*			
Manufacture of sail cloth and such like fabrics -	2926	5th Nov. 1870	George Doig Nicol.
Manufacture of lint for surgical, medical and other purposes.	3042	21st Nov. 1870	Arthur Chilver Tupper.
Manufacture of cambrics - - -	3044	21st Nov. 1870	William Henry Fletcher.
Manufacture of non-inflammable brattice cloths -	3348	22nd Dec. 1870	Oswald Brooke. Alfred William Read.
Improvements in the manufacture of felted fabrics and in the machinery or apparatus employed therein. (*for counterpanes.*) (*Communicated by Robert Spencer.*)	3404	31st Dec. 1870	William Edward Newton.
FEATHERS; ARTIFICIAL FEATHERS AND FLOWERS.			
Preparing, treating and purifying fibrous vegetable and fibrous animal substances. (*feathers.*)	588	28th Feb. 1870	Thomas Cattell.
Manufacture of artificial flowers and foliage - (*Communicated by Octave Eugène Fillion.*)	606	1st March 1870	Alexander Melville Clark.
An improved process for cleaning wool or hair - (*and cleaning feathers.*) (*Communicated by Charles F. A. Simonin and Edward W. Coffin.*)	1219	27th April 1870	William Robert Lake.
Improved means of dyeing or coloring articles - (*artificial flowers.*)	2082	23rd July 1870	Gaudente Sparagnapené.
A new application of a vegetable fibre to purposes for which feathers or feather down have heretofore been used. - - - -	3247	12th Dec. 1870	James Olerenshaw Rigby. George Cussons, junior.
FENCES AND RAILINGS.			
Improvements in the manufacture of welded iron or steel tubes and in the means or apparatus employed in such manufacture. (*for fences.*)	1435	18th May 1870	Edward Peyton.
Improved methods of connecting together the vertical and horizontal bars of iron hurdles, palisading and other kinds of fencing. -	1901	5th July 1870	Thomas Hydes. William Wigfull.
A continuous self-wedging fencing - -	1970	12th July 1870	Richard Long.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FENCES, &c.—*continued.*			
Mode of training hops, the sockets for the poles or posts of same and other posts, applicable also for the boring for water. (*posts for fences.*) (*Communicated by Eduardo Blythe.*)	2705	13th Oct. 1870	David Monroe Childs.
A new or improved manufacture of fences, paling and such like enclosures of sheet iron and other metal.	3075	24th Nov. 1870	Henry Henson Henson.
Iron fencing - - - - -	3281	15th Dec. 1870	Thomas Day.
FIBRES (*Obtaining from Plants, Recovering from Manufactured Goods, Separating, Cleansing, Packing.*)			
Wire ties for securing bales of cotton, hay or other material. (*Communicated by Edwin S. Lenox.*)	16	3rd Jan. 1870	William Robert Lake.
Improved apparatus for preparing fibrous substances for spinning. (*Communicated by Emile Hubner.*)	104	12th Jan. 1870	Alfred Vincent Newton.
Machinery for preparing fibres for spinning - (*Communicated by André Koechlin.*)	106	12th Jan. 1870	Alfred Vincent Newton.
Improvements in machinery for breaking and softening flax and other fibrous materials, which improvements are also applicable to calendering rollers and other purposes where a combined reciprocating rotary motion can be employed.	128	15th Jan. 1870	Thomas Robert Hay Fisker.
Rag engines - - - - -	132	15th Jan. 1870	Edwin Grundy Wrigley.
Machinery for breaking, heckling, streaking and cleaning hemp, cleaning flax tow, washing wool, and heckling, cleaning or washing other fibrous materials.	280	31st Jan. 1870	Edward Brasier.
Machinery for breaking hemp, flax, jute or other similar material.	312	3rd Feb. 1870	William Shann.
Machinery for preparing flax and other fibrous materials for manufacturing purposes, but specially adapted for the preparation of the grass known as "crin."	337	5th Feb. 1870	Henry Gardner.
Improvements in machinery or apparatus for washing or scouring and drying wool and other fibrous materials and yarns or threads.	386	9th Feb. 1870	John Petrie, junior.
Treatment of certain fibrous substances to be used in the manufacture of paper pulp for paper and for conversion into textile fabrics.	587	28th Feb. 1870	Charles Duff.
Preparing, treating and purifying fibrous vegetable and fibrous animal substances.	588	28th Feb. 1870	Thomas Cattell.
Treatment of fibrous materials suitable for the manufacture of paper.	748	14th March 1870	Thomas Routledge.
Improved machinery or apparatus and processes for the manufacture of paper and other pulp from wood and other fibrous materials.	750	15th March 1870	John Felber.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FIBRES, &c.—*continued.*			
Apparatus for facilitating the sorting of wool -	886	25th March 1870	William Ramsden. John Charles Pearce. Robert Ayrey.
Apparatus for drying grain, malt, roots, spent malt or hops, megass or spent sugar cane, wool and other substances.	966	2nd April 1870	Henry Jackson.
Improvements in the utilization of a certain material obtained in treating cotton seed and in machinery employed therein. - - (*obtaining fibres.*)	997	5th April 1870	Thomas Rose. Robert Emerson Gibson.
Improvements in the manufacture of non-explosive compounds forming the material for the manufacture of collodion and other substances, and in apparatus therefor. - - - (*from vegetable fibres.*)	1017	6th April 1870	William Thomas Henley. Daniel Spill, junior.
Obtaining fibre suitable for making paper and a brown coloring matter.	1024	7th April 1870	Louis Abraham Brode.
Machinery for cleaning, preparing and spinning cotton and other fibrous substances.	1078	13th April 1870	Edward Lord.
Machinery for treating cotton seeds - - (*separating the fibre.*)	1121	18th April 1870	William Henry Delamare.
An improved process for cleaning wool and separating the grease therefrom.	1123	18th April 1870	Paul Toepler.
Machinery for hulling cotton seeds and separating their kernals from the hulls and fibres.	1175	22nd April 1870	Henry Shaw.
Machinery or apparatus for separating and sorting cotton or other fibrous substances. - -	1195	25th April 1870	John Lord. Jonathan Gresty. Christopher Cross.
An improved process for cleaning wool or hair - (*Communicated by Charles F. A. Simonin and Edward W. Coffin.*)	1219	27th April 1870	William Robert Lake.
Machinery for breaking, softening and preparing flax and other fibrous materials.	1235	29th April 1870	Robert Hanham Collyer.
Machinery for dressing flax, hemp and other analogous materials.	1317	9th May 1870	David Brown.
A new or improved detergent compound to be used in the manufacture of soap and for cleaning wool and woollen goods and for other like purposes.	1331	10th May 1870	William Hunt.
Treatment of esparto grass and other fibrous materials.	1525	26th May 1870	George Lunge.
Construction of machinery for preparing and hackling flax. - - - - (*scutching machine.*)	1591	1st June 1870	George Lowry. Samuel Brookes.
Machinery for pressing cotton and other materials	1641	7th June 1870	Walter West. Daniel Kemp West.
Woven and knitted fabrics and yarns - - (*Communicated by Louis Robbins and John Southmayd.*)	1661	8th June 1870	George Tomlinson Bousfield.
A new or improved machine for dressing and separating the fibres of certain fibrous substances, the same being specially applicable for treating rhea or China grass. - - - (*Communicated by John Greig, the younger.*)	1690	11th June 1870	David Greig. John Greig.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FIBRES, &c.—*continued.*			
An improved compound for the lubrication of wool and other similar animal material in their processes of manufacture.	1753	18th June 1870	John James Lundy.
Apparatus for cutting wood into small strips, filaments or shavings.	1828	27th June 1870	William Riddell.
Softening fibrous substances when batching, spinning or twisting them.	2067	21st July 1870	John Hunter.
Production of filamentous matter suitable for spinning from sundry plants. (*Communicated by August Deininger.*)	2141	1st Aug. 1870	Frederick Arthur Paget.
Improvements in the mode of extracting the filaments of straw and the bark of the mulberry tree, and in converting the same into pulp for the manufacture of paper and in the apparatus therefor.	2190	6th Aug. 1870	Gustave Demailly.
Certain improvements in machinery for ginning cotton.	2262	15th Aug. 1870	David Ellis.
Improvements in the treatment of certain fibrous substances to be used in the manufacture of paper pulp for paper and for conversion into textile fabrics.	2351	27th Aug. 1870	Charles Duff.
Machinery for washing wool - - - (*Communicated by John Yewdall and William Yewdall.*)	2392	2nd Sept. 1870	Bristow Hunt.
Improvements in washing wool and other textile materials, and in apparatus to be employed for such purpose. (*Communicated by Auguste Féron-Flamant.*)	2417	6th Sept. 1870	Bristow Hunt.
Preparation of fibrous materials to render them suitable for use as lint for surgical purposes.	2454	10th Sept. 1870	Theophilus Westhorp.
Apparatus suitable for scouring, washing, bleaching, dyeing and drying fibrous materials in the raw and manufactured state, and for like purposes. - - - -	2462	12th Sept. 1870	Thomas Nesham Kirkham. Vernon Francis Ensom. George Spence.
Improvements in the treatment of fibrous materials suitable for the manufacture of paper and in apparatus to be employed therein.	2470	13th Sept. 1870	Thomas Routledge.
Improvements in and relating to the packing of fibrous or loose materials in ships.	2712	14th Oct. 1870	William Bruce Thompson.
An improved process for cleaning wool and separating the grease therefrom.	2745	18th Oct. 1870	Paul Toepler.
Machinery or apparatus for washing, opening and drying wool and other fibrous materials and washing yarns. - - - -	2772	21st Oct. 1870	John McNaught. William McNaught, jun.
An improved compound for the lubrication of wool and other similar animal material in their processes of manufacture, and in preventing and arresting the combustion of such materials.	2810	25th Oct. 1870	John James Lundy.
Improvements applicable to machinery for washing or scouring wool and other fibrous materials, applicable also to other machinery for conveying, opening and cleaning fibrous materials. -	2942	8th Nov. 1870	William Thomas. William Rothwell.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FIBRES, &c.—*continued.*			
Machinery for preparing and washing wool and other fibrous materials, and for mixing and forming fur or materials for felt hat bodies.	3038	21st Nov. 1870	John Charles Edwards. John Taft.
Hydraulic presses for pressing cotton, jute and other fibrous substances. (*Communicated by James Masson and Samuel Hodgert.*)	3084	24th Nov. 1870	Saint John Vincent Day.
A new application of a vegetable fibre to purposes for which feathers or feather down have heretofore been used. (*thistle down.*)	3247	12th Dec. 1870	James Olerenshaw Rigby. George Cussons, junior.
Improvements in medicating cotton and other fibres for sanitary and surgical purposes and in machinery employed therein.	3367	24th Dec. 1870	John Gamgee. William Henry Maitland.
FILES AND CLIPS.			
A new or improved means of securing or fastening the leaves in music, periodicals and books, applicable for securing together papers of various kinds and samples and patterns.	191	21st Jan. 1870	Franklin Hocking.
Apparatus for binding together or filing papers (*Communicated by Claude Morey, Nicholas Alphonse Aubertin the younger, and François Motte.*)	535	23rd Feb. 1870	Alexander Melville Clark.
An improved device for holding letters and other documents.	663	5th March 1870	Frank Theophilus Ferguson.
An improved spring clip, file or binder (*Communicated by Anthony Morris Crowhurst.*)	1021	7th April 1870	Thomas Adams.
Improvements whereby important documents, letters, invoices and paid bills may be preserved and be readily referred to. (*see* "BOOKS.")	1886	4th July 1870	Henry Blandy.
Holders and portfolios for holding or filing music and other sheets, and for other like purposes.	2971	11th Nov. 1870	Frederick Brampton.
FILES AND RASPS.			
Machinery for filing	412	11th Feb. 1870	James Willis Dixon, junior. John Bates.
Rasps and files (*Communicated by Ira Franklin Thompson.*)	2560	23rd Sept. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FILTERING, PURIFYING AND CLARIFYING LIQUIDS; FILTERS; DISTILLING WATER, SOFTENING WATER,			
Filters or other apparatus for the purification of water or other liquids under a high pressure.	78	11th Jan. 1870	John Edward Lipscombe.
Improvements in filtering saccharine solutions and other liquids and in means or apparatus employed therein.	204	22nd Jan. 1870	William Thurston Waite.
An improved method of extracting juices from plants and of separating liquid or soluble matter from solids. (*applicable to filtering.*) (*Partly communicated by Julius Robert.*)	219	24th Jan. 1870	Ferdinand Kohn.
Treatment of certain substances for food and for manure. (*straining.*)	260	28th Jan. 1870	James Dewar.
An improved mode of and apparatus for revivifying animal charcoal. (*for filtering.*) (*Communicated by Doctor Herrmann Eipfeldt and Camillo Thumb.*)	309	2nd Feb. 1870	William Robert Lake.
Mode of and apparatus for treating and purifying sewage.	364	8th Feb. 1870	George William Wigner.
Improvements in treating and filtering sewage and in apparatus to be employed for these purposes.	506	21st Feb. 1870	John Leopard.
Machinery or apparatus for straining paper pulp - (*Communicated by Jules Mathieu.*)	536	23rd Feb. 1870	John Henry Johnson.
Effecting the decolorisation, deodorisation and purification of foul and waste waters of sewage and of supernatant sewage water.	713	10th March 1870	John James Lundy.
Self-cleansing high-pressure filters for the purification of water. - - - - - -	842	22nd March 1870	William Henry Clemesha. Thomas Roberts.
Filters - - - - - - - - - (*Communicated by Frederick C. Krause.*)	1082	13th April 1870	Charles Joseph.
Brewing ale and other malt liquors - - - (*filtering mash liquor.*) (*Communicated by James McCormick.*)	1336	10th May 1870	William Robert Lake.
Improvements in the manufacture of artificial stone and in articles composed thereof. (*filters.*)	1822	27th June 1870	William Bennet Adamson.
An improved and combined hydraulic filter and double-valve tap.	1849	29th June 1870	Samuel Norton.
Improvements in utilising and deodorising sewage matters of dwelling-houses and other places and in apparatus to be used in connection with the same.	2047	20th July 1870	John Hughes Lloyd.
Improvements in treating sewage and in manufacturing manure.	2048	20th July 1870	Charles Bartholomew.
Purifying, deodorising and utilising sewage and other refuse and deleterious matters, and for machinery therein employed.	2297	20th Aug. 1870	Joseph Judge Hays.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FILTERING, &c.—*continued.*			
Improvements in apparatus for economizing the waste heat and gases from furnaces and in means for generating, collecting and purifying gases, such gases being applicable to various useful purposes. (*applicable for purifying water.*)	2377	31st Aug. 1870	Thomas Atkins.
Means employed for the purification of water	2516	19th Sept. 1870	Gustav Bischof, junior.
Improvements in filtering and in apparatus for the purpose.	2517	19th Sept. 1870	Henry Harris.
Deodorization and utilization of sewage or other feculent or putrescent matter, whether in a solid, fluid or a semifluid state.	2534	21st Sept. 1870	Ferrar Fenton. Samuel Hollins.
Manufacture of oil and other products of petroleum (*Communicated by Charles Toppan.*)	2762	20th Oct. 1870	William Robert Lake.
Apparatus for purifying sewage	2832	27th Oct. 1870	William Frost Sweetland. John Merfield.
Filters (*Communicated by Thomas Simmons.*)	3071	24th Nov. 1870	Charles Mendel Joseph.
Apparatus for treating sewage matter and for filtering sewage and other water.	3269	14th Dec. 1870	Frederick Ludewig Hahn Danchell.
Filters and the fittings connected therewith	3315	19th Dec. 1870	Robert Russell.
Improvements in deodorising and purifying sewage, urine and refuse matters and liquids, and in making manure therefrom, and in apparatus for those purposes. (*purifying effluent water.*)	3399	30th Dec. 1870	Christopher Rawson. Philip Ovenden. James Wylde. William McCree. Henry Hill.
FINISHING, DRESSING, SINGEING, SHEARING, FOLDING AND PRESSING WOVEN FABRICS, YARNS, &c.; CUTTING FUSTIANS.			
Improvements in machinery for breaking and softening flax and other fibrous materials, which improvements are also applicable to calendering rollers and other purposes where a combined reciprocating rotary motion can be employed.	128	15th Jan. 1870	Thomas Robert Hay Fisken.
Raising gigs used in the process of raising the nap of woollen cloth or other fabrics.	199	22nd Jan. 1870	John Dawson. Thomas Constantine Fawcett.
Improvements in the manufacture of size and in the application of a certain material for conditioning cotton and other fibrous substances.	375	9th Feb. 1870	Christopher Crossley. Robert Whipp. Thomas Crossley.
Improved apparatus for producing fringe upon woven fabrics. (*Communicated by Nathaniel Wheeler.*)	395	10th Feb. 1870	William Robert Lake.
Machines for polishing yarns or threads (*Communicated by Sixte Pierre Villain.*)	417	12th Feb. 1870	William Spence.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FINISHING, &c.—*continued.*			
Machinery or apparatus for drying woven fabrics and yarns or threads and for "ageing" woven fabrics.	527	23rd Feb. 1870	James Farmer.
Improvements in the manufacture of yarns and fabrics containing horse hair and in means or methods for shaping and utilizing fabrics containing the same or analogous stiffening material. (*calendering.*)	604	1st March 1870	Henry Hayward.
Dressing, stiffening or finishing and printing textile materials and fabrics and paper.	651	5th March 1870	James Strang.
Improved arrangements or combinations of machinery for finishing threads or yarns of cotton or other fibrous materials. - - -	702	10th March 1870	Oliver Ormrod. Robert Hall.
Machinery and apparatus for drying, clearing, smoothing, stretching and lustreing or glossing yarn or thread in the hank or skein.	843	22nd March 1870	William Gallimore.
Machinery or apparatus to be employed for "filling" or starching woven fabrics made from cotton, flax or other fibrous substances.	969	2nd April 1870	Thomas Lewis Livsey.
Manufacture of size - - - - (*for stiffening fabrics.*)	1020	7th April 1870	Christopher Crossley. Robert Whipp. Thomas Crossley.
Improvements in finishing linen, cotton and other fabrics, and in apparatus to be used for such purposes. (*Communicated by Franz Friedrich Gullick.*)	1050	9th April 1870	Peter Christian Thamsen.
Machinery employed in slubbing, drawing and finishing worsted and other fibres.	1181	23rd April 1870	Thomas Feather.
Machinery for plaiting or folding tapes and other narrow fabrics. - - - -	1187	23rd April 1870	Marcus Brown-Westhead. Robert Smith.
Machinery or apparatus for cutting or shearing and ripping and clipping the "whip" of lappet cloth or other fabrics.	1248	2nd May 1870	James Christie.
Manufacture or production of gaiters, cuffs, mitts or other similar articles.	1293	5th May 1870	William Thornton.
An improvement in the manufacture of sewing thread. (*steaming.*)	1326	9th May 1870	Charles Brook.
Machinery or apparatus for washing and drying wool, yarn and other fibrous materials. (*or sizing yarn in the hank.*) - - -	1511	25th May 1870	John McNaught. William McNaught.
An improved process and apparatus for preparing and finishing printed paper.	1522	26th May 1870	John Appleton. Robert Craib Ross.
Machinery or apparatus employed in the process of bleaching, scouring, dyeing and sizing warps or yarns and fabrics. - - -	1548	27th May 1870	John Dargue. William Dargue.
Improvements in or applicable to milling or fulling and washing machines.	1632	6th June 1870	Alfred Johnson.
An improved stop motion applicable to machinery or apparatus employed in bleaching, scouring, dyeing, sizing and dressing warps, yarns and fabrics, also in carding and combing wool or other fibrous substances. - - -	1654	8th June 1870	William Dewhirst. Thomas Dewhirst. Joseph Dewhirst.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FINISHING, &c.—*continued.*			
Process of and machinery for cleaning and finishing carpet fabrics.	2093	25th July 1870	John Wilkinson the younger.
Machinery or apparatus for cutting the pile of cotton velvets and other similar piled fabrics.	2182	5th Aug. 1870	John Taylor.
Machinery or apparatus for cutting the pile of velvets, velveteens and other piled fabrics.	2209	9th Aug. 1870	John Taylor.
Manufacture of elastic fabrics - - - (*producing a napped surface.*)	2272	16th Aug. 1870	Archibald Turner. Luke Turner.
Apparatus suitable for scouring, washing, bleaching, dyeing and drying fibrous materials in the raw and manufactured state, and for like purposes. - - - - - - - (*lustreing of facing cloth.*)	2462	12th Sept. 1870	Thomas Nesham Kirkham. Vernon Francis Ensom. George Spence.
Machinery for raising the pile on woollen and other cloths. - - - - - - -	2518	19th Sept. 1870	William Kempe. Arthur Kempe.
Machinery or apparatus for the manufacture of lint and lint bandages.	2539	22nd Sept. 1870	Samuel Shaw Brown.
Machinery for twisting and laying cords and rope - (*smoothing and finishing.*) (*Communicated by Howard Perkins.*)	2572	27th Sept. 1870	John Russell Taber.
"Steamers" or cylinders employed in conjunction with cloth mills and gigs. - - -	2613	1st Oct. 1870	Benjamin Siddall. Joseph Siddall.
Improved apparatus for singeing fabrics - -	2787	22nd Oct. 1870	James Worrall.
Hollow rolls or cylinders attached to spindles - (*calendar rolls.*)	2789	22nd Oct. 1870	Anthony Gapper Southby.
Construction of bowls or rollers used in calendering and other pressing or squeezing machinery.	2827	27th Oct. 1870	Robert Brewitt.
Machinery for cropping or shearing textile fabrics -	2932	7th Nov. 1870	John Clayton.
Machinery or apparatus for "dewing" woollen or other woven or felted fabrics. - - -	3122	29th Nov. 1870	Joseph Bottomley. William Bottomley the younger.
Machinery, apparatus or means for heating, drying and finishing woven fabrics, drying yarns, fibrous materials and other similar substances. -	3163	2nd Dec. 1870	John Weems. William Weems.
Improved compositions for sizing, dressing and finishing threads, yarns, textile fabrics and paper.	3273	14th Dec. 1870	Elijah Slack.
Apparatus for singeing piece goods - -	3289	15th Dec. 1870	James Worrall.
A mode or modes of and apparatus for folding longitudinally and changing the planes of motion of travelling sheets or webs, which improvements are partly applicable to the driving belts of skewed pullies. (*finishing and making up.*)	3319	19th Dec. 1870	Achibald Sandeman.
Machinery or apparatus employed in the cutting or clipping of lace and other fabrics.	3340	21st Dec. 1870	James Cook.
See also "DRYING."			

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FIRE-ARMS, GUNS, ORDNANCE, GUN-CARRIAGES, TARGETS, RIFLE PRACTICE.			
Breech-loading rifles - - - -	36	5th Jan. 1870	Charles Henry Westendarp. Daniel Dowling.
Breech-loading fire-arms - - -	92	12th Jan. 1870	Henry Jones.
Breech-loading fire-arms - - -	115	13th Jan. 1870	Albert Bernard Zieschang. Frederick Louis Hugo Schmidt.
Breech-loading arms and cartridges - - (*and sporting guns.*)	116	13th Jan. 1870	Thomas Restell.
Breech-loading fire-arms and cartridges - -	144	18th Jan. 1870	Westley Richards.
Construction of breech-loading fire-arms - -	160	19th Jan. 1870	Charles Gordon.
Sights for fire-arms and ordnance - - -	168	19th Jan. 1870	William Mavitta.
An improved toy air-gun and projectile for the same. (*Communicated by Henry Josiah Griswold.*)	192	21st Jan. 1870	William Robert Lake.
Breech-loading fire-arms - - - (*Communicated by François Glisenti.*)	269	29th Jan. 1870	Alexander Horace Brandon.
Construction of breech-loading fire-arms - -	313	3rd Feb. 1870	Charles Gordon.
Breech-loading fire-arms - - - -	324	4th Feb. 1870	John Thomas.
Improvements in breech-loading fire-arms and in the manufacture of cartridges for the same.	353	7th Feb. 1870	John Hanson.
An improved side arm for clearing the chambers and rifling of ordnance.	380	9th Feb. 1870	John Tyndale Greenfield.
Apparatus or appliances for transporting heavy objects from one locality to another. (*transporting heavy guns.*)	406	11th Feb. 1870	Alexander Burton Brown.
Breech-loading fire-arms - - -	452	16th Feb. 1870	William Middleditch Scott.
Breech-loading fire-arms - - - - (*Communicated by Friedrich Von Martini.*)	603	1st March 1870	William Lloyd Wise.
Improvements in the mounting, working and pointing of guns and in the construction of the carriages upon which they are mounted.	647	4th March 1870	Robert Anthony Edwards Scott.
Breech-loading fire-arms - - -	687	8th March 1870	James Lang.
Fire-arms - - - - -	703	10th March 1870	Thomas Newton.
Fire-arms with central-fire action - - -	752	15th March 1870	William Rochester Pape.
Gun carriages and their slides - - - (*Communicated by John Wall Wilson.*)	770	15th March 1870	William Edward Newton.
Revolving fire-arms - - - - (*Communicated by Charles Felix de Dartein and Jules Edouard de Dartein.*)	778	16th March 1870	Henry Woodcroft Hammond.
Improvements in the manufacture of bars, plates and sheets of steel, or steel and iron combined, and in the process of welding employed in such manufacture. (*for wheels of field artillery.*) (*Communicated by John Absterdam.*)	856	23rd March 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FIRE-ARMS, &c.—*continued.*			
Guns and projectiles therefor	1092	14th April 1870	Addington Taylor.
Improvements in treating copper, zinc, tin and their compounds, and in obtaining metallic compounds or alloys suitable for various useful and ornamental purposes. (*for guns.*)	1118	16th April 1870	Andrew Linmore Dowie.
Construction of revolvers	1119	16th April 1870	Paul Jean Xavier Günther. Jacques Antoine Creuzé de Latouche.
Breech-loading fire-arms	1168	22nd April 1870	Ernest Farrington.
Breech-loading needle guns (*Communicated by Carl Anthony Klintberg.*)	1210	27th April 1870	Henry Atkinson.
Breech-loading fire-arms and cartridges therefor	1283	4th May 1870	Bethel Burton.
Breech-loading fire-arms	1474	21st May 1870	Philip Webley. Thomas William Webley.
Fire-arms	1540	27th May 1870	Gottlieb Zeller.
Breech-loading fire-arms (*Communicated by Joseph Auguste Cesar Brun.*)	1551	27th May 1870	Henri Adrien Bonneville.
Breech-loading fire-arms	1621	4th June 1870	Charles Clarance.
Improvements in military and sporting guns, and also in cartridges applicable to the same or other descriptions of breech-loading arms.	1635	6th June 1870	Thomas Restell.
Machinery or apparatus for testing strain or pressure applied to solid bodies and for other like purposes. (*gun barrels.*) (*Communicated by Jules Auguste Deygoffe.*)	1649	7th June 1870	William Robert Lake.
Improvements in fire-arms and ordnance, and in rifled projectiles and machinery for the manufacture of the same.	1745	17th June 1870	Sir Joseph Whitworth.
Improvements in breech-loading fire-arms and in cartridges for the same. (*Communicated by Charles Edward Sneider.*)	1829	27th June 1870	William Robert Lake.
Breech-loading fire-arms	1940	8th July 1870	Ambjorn Pierre. Count Sparre.
Improvements in revolvers and revolving fire-arms and in apparatus to be used therewith. (*Communicated by Albert Spirlet.*)	2107	27th July 1870	John Piddington.
Fire-arms	2205	9th Aug. 1870	Westley Richards.
Breech-loading fire-arms	2207	9th Aug. 1870	John Ingram.
Construction of breech-loading fire-arms	2221	10th Aug. 1870	Charles Gordon.
Improvements in rifled small arms and ordnance, in tools or apparatus for rifling the same, and in projectiles for the said ordnance.	2282	18th Aug. 1870	William Hastings Sim.
Improvements in fire-arms and in projectiles to be used therewith.	2317	23rd Aug. 1870	Charles Weightman Harrison.
Apparatus for mounting and working a combination of fire-arm barrels.	2342	26th Aug. 1870	Thomas Edmonds Mulock.
Breech-loading fire-arms	2360	27th Aug. 1870	Thomas Restell.
Improved construction of wheels for gun carriages, carts and other vehicles.	2396	2nd Sept. 1870	Herbert Holmes. Arthur Holmes.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FIRE-ARMS, &c.—*continued.*			
An improved mode of operating the "Gatling" gun and other guns of like character. (*Communicated by George O'Kinne.*)	2463	12th Sept. 1870	Alfred Vincent Newton.
Apparatus for supplying or feeding revolving guns or mitrailleuses with cartridges.	2474	14th Sept. 1870	Lewis Wells Broadwell.
Breech-loading fire-arms - - - - -	2574	28th Sept. 1870	Olof Nilson.
Breech-loading fire-arms - - - - -	2638	5th Oct. 1870	John Dunstan.
Breech-loading fire-arms - - - - -	2674	8th Oct. 1870	Joseph Needham.
Improvements in breech-loading fire-arms and in metallic cartridges for the same. (*Communicated by General Hiram Berdan.*)	2675	10th Oct. 1870	George Coburn Wilson.
Ordnance and projectiles therefor - - (*cannon and mortars.*)	2707	13th Oct. 1870	Henry Huthnance.
An improvement applicable to the stocks of muskets (*Communicated by Richard Jordan Gatling.*)	2744	18th Oct. 1870	Alfred Vincent Newton.
Breech-loading fire-arms - - - - -	2769	20th Oct. 1870	Alexander Henry.
Improvements in breech-loading fire-arms and in fixing bayonets to breech-loading fire-arms.	2809	25th Oct. 1870	Westley Richards.
Breech-loading fire-arms and cartridges - - (*Communicated by Paul Gavidel.*)	2907	3rd Nov. 1870	Alexander Melville Clark.
Breech-loading fire-arms - - - - -	2917	4th Nov. 1870	Henry Macaulay.
Breech-loading guns - - - - -	2980	14th Nov. 1870	Charles Golden.
Improvements in the construction and arrangement of forts or towers and in the mode of working the guns therein.	3046	21st Nov. 1870	Sir Eustace Fitzmaurice Piers.
Breech-loading fire-arms - - - - - (*Communicated by Benjamin Franklin Joslyn and Benjamin Tomes.*)	3050	21st Nov. 1870	John Henry Johnson.
Breech-loading fire-arms - - - - -	3083	24th Nov. 1870	Joseph Blount Wayne.
Breech-loading fire-arms - - - - -	3097	25th Nov. 1870	Henry Allen.
Breech-loading fire-arms - - - - -	3116	28th Nov. 1870	Charles Edmond Green. John Green.
An improvement in the action of break-down guns with a snap fastening.	3118	28th Nov. 1870	James Purdey.
Construction of mitrailleurs or machine guns -	3119	28th Nov. 1870	Henry Heather Bigg.
Improvements in the construction of ordnance and in the mode of propelling projectiles, and also in the cartridges and ammunition used for that purpose.	3130	29th Nov. 1870	Henry Bessemer.
Revolving fire-arms - - - - - (*Communicated by Charles John Linberg and William John Phillips.*)	3154	1st Dec. 1870	Alexander Melville Clark.
Breech-loading fire-arms and appliances connected therewith.	3178	3rd Dec. 1870	John Farquharson.
Breech-loading fire-arms - - - - -	3226	8th Dec. 1870	William Henry Tooth.
Breech-loading fire-arms - - - - -	3242	10th Dec. 1870	Lieutenant Francis Bacon.
Breech-loading ordnance - - - - -	3302	17th Dec. 1870	George Wightwick Rendel.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FIRE-ARMS, &c.—*continued.*			
Improvements in ships of war and in the working of large guns.	3326	20th Dec. 1870	Frank William Haddan.
Construction and manufacture of percussion caps for the ignition of cartridges.	3363	23rd Dec. 1870	George Clark.
Improvements in breech-loading fire-arms and in cartridges for the same. (*Communicated by Charles Edward Sneider.*)	3376	24th Dec. 1870	William Robert Lake.
For Ammunition, *see* "CARTRIDGES."			
" " *see* "GUNPOWDER."			
" " *see* "SHOT."			
FIRE-ENGINES; FIRE-ESCAPES; EXTINGUISHING FIRES.			
Apparatus for generating carbonic acid gas for application to the extinction and prevention of fire.	196	22nd Jan. 1870	James Paton. Peter Harris. Robert Harris.
An improved portable scaffolding (*for salvage in case of fire.*)	252	28th Jan. 1870	Bartolammeo Conci.
An improved automatic apparatus for producing carbonic acid for the manufacture of effervescing or gaseous liquids, and for the application of such liquids to various purposes. (*throwing carbonized water on fires.*) (*Communicated by Anet Jaques Nadaud.*)	305	2nd Feb. 1870	William Robert Lake.
Fire-escapes	431	14th Feb. 1870	William Larking.
Machinery for propelling vessels and aerial machines by reaction, parts of which are applicable to forcing fluids for other purposes. (*for fire pumps.*)	623	3rd March 1870	Richard Boyman Boyman.
Improvements in apparatus and in combined materials for generating gases for extinguishing fires in mines, vessels, buildings or other places, such apparatus being available for warming buildings or apartments.	642	4th March 1870	Thomas Atkins.
Receptacles intended to be used as a protection from fire.	694	9th March 1870	James Duffey.
Apparatus for extinguishing fire (*Communicated by C. Gilbert Wheeler.*)	714	10th March 1870	William Robert Lake.
Apparatus for the preservation of life from fire (*escape.*)	774	16th March 1870	William Morgan.
An improved apparatus for preserving life from fire	812	18th March 1870	William Friar.
A new or improved arrangement of apparatus for forcing and projecting liquids or fluids, and raising the temperature of the same. (*for extinguishing fires.*)	996	5th April 1870	James More. William Leckie Graham Wright.
Bedsteads whereby they may be rendered available as an escape in case of fire.	1085	13th April 1870	Charles Hamilton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FIRE-ENGINES, &c.—*continued.*			
Apparatus for extinguishing fires in warehouses, houses, mills, factories, chemical works, public buildings, ships, and other structures.	1091	13th April 1870	Thomas Dale.
Safety apparatus for steam boilers - - (*extinguishing the fires.*)	1125	18th April 1870	Alexander Morton Strathern. David Graeme Morrison.
Apparatus for saving life and property from fire, applicable also for lowering weights for other purposes.	1259	2nd May 1870	Edwin Robert Wethered.
Improvements in fire-escapes applicable to the windows of dwelling-houses.	1377	13th May 1870	Thomas Bennett Gilbert.
Connections for fire-engine hoses and other pipes - (*Partly communicated by Montgomery Gibs.*)	1508	24th May 1870	Loftus Perkins.
Domestic fire-escapes - - - -	1518	25th May 1870	Samuel Edward Tyrrell Steane.
Improvements in motive-power, and in machinery, apparatus or appliances to be used in connection therewith. (*applicable to fire-engines.*)	1537	27th May 1870	William Astrop.
Treatment of slag and other vitreous material - (*for arresting the spread of fire.*) (*Communicated by Henry Baldwin, junior.*)	1644	7th June 1870	George Tomlinson Bousfield.
Apparatus for ventilating ships and for extinguishing fires on board same. (*Communicated by Edward Kirk Horn.*)	1705	14th June 1870	George Wells.
Apparatus for extinguishing fire - - - (*Communicated by C. Gilbert Wheeler.*)	2172	4th Aug. 1870	William Robert Lake.
Pumps - - - - - (*or fire-engines.*)	2319	23rd Aug. 1870	Frederick Holmes.
Apparatus or appliances for saving life from fire -	2348	26th Aug. 1870	William Riddle.
Fire-engines - - - - -	2413	5th Sept. 1870	Richard Moses Merryweather.
Improved appliances for extinguishing fires -	2489	15th Sept. 1870	John Hamilton. Robert Paterson.
Apparatus for raising and lowering weights, which apparatus is more especially intended as a fire-escape.	2616	1st Oct. 1870	Edward Dumaresq Thomas.
Combined lifting and force pumps - - (*may be used in case of fire.*) (*Communicated by Isaac H. Gustin.*)	2633	4th Oct. 1870	George Haseltine.
Improvements in treating sewage, and in the apparatus and means employed therein. (*obtaining water for charging fire mains.*)	2653	6th Oct. 1870	Charles Felton Kirkman.
Improvements in the manufacture of boots and shoes or other coverings for the feet, parts of which improvements are also applicable in the manufacture of millstraps or bands, harness, hose pipes and other similar articles, and in the machinery, apparatus or means to be used for effecting such purposes. (*hose pipes.*)	2698	12th Oct. 1870	Thomas White.
Production of motive-power and appliances connected therewith - - - (*pumps or fire-engines.*)	2729	17th Oct. 1870	George Bell Galloway. George Thomas Galloway.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FIRE-ENGINES, &c.—*continued.*			
Outlet or jet pipes of fire engines, high pressure mains and other apparatus. (*Communicated by Jan Anthony Muller.*)	2820	27th Oct. 1870	Edward Thomas Hughes.
Steam fire-engines	2836	27th Oct. 1870	Edward Field. Richard Moses Merryweather.
Construction of ladders for general purposes, also applicable as a fire escape.	3132	30th Nov. 1870	Charles Martin. George Owen Mew.
FIRE-PLACES, GRATES AND STOVES; FENDERS AND FIRE GUARDS.			
Portable stoves, lamps and lanterns	11	3rd Jan. 1870	Frederick Jones Duggan.
An improved gas stove, part of which is also applicable to blow pipes and forges.	15	3rd Jan. 1870	Thomas Charles Olney.
Heating apparatus (*hot air stove.*) (*Communicated by Jules Henry Weibel.*)	54	6th Jan. 1870	John Henry Johnson.
Improved means for warming and ventilating close carriages and boat saloons. (*a movable stove.*) (*Communicated by Pierre Grandjean.*)	122	14th Jan. 1870	Henri Adrien Bonneville.
Improvements in the construction of steam and other boilers and in apparatus used therewith for economising heat, condensing steam and saturating heated air. (*and utilising heat from ordinary fire-places.*)	124	15th Jan. 1870	James Wadsworth.
An improvement in or addition to ordinary fire-grates.	156	19th Jan. 1870	William Frederick Padwick.
Fire-places or stoves	307	2nd Feb. 1870	James Pigott Pritchett.
Gas stoves	422	12th Feb. 1870	James Morrison.
Cooking ranges	514	22nd Feb. 1870	Hugh Ferguson.
Means and utensils employed with apparatus used in cooking, combining arrangements for burning a light, forming a complete "kitchener."	658	5th March 1870	Ebenezer Stevens.
Stoves for drying bricks and other articles in pottery	735	12th March 1870	James Dunnachie.
Fire-grates	840	22nd March 1870	John Milne.
Improvement in steam-boiler and other furnaces, applicable in part to fire grates and stoves of various kinds.	865	24th March 1870	Joseph Sawyer. John Brindley.
Mantel register stoves and register stoves	893	26th March 1870	James Clifford Morgan. Henry Macaulay. Francis William Waide.
Improvements applicable to fire-places, stoves and grates for ensuring safety against fire and the prevention of smoky chimneys. (*rolling curtain or fire guard.*)	1067	12th April 1870	Lewis William Thomas.
Heating stoves or furnaces	1163	21st April 1870	Maurice Chapman Hull.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FIREPLACES, &c.—*continued.*			
Boilers, air heaters, steam condensers and analogous constructions for transferring heat from one fluid to another. (*pipes applied to stoves.*)	1191	25th April 1870	Samuel Dyer Tillman.
Gas cooking stoves - - - - -	1206	26th April 1870	John Palmer.
An improved construction and arrangement of grate bars. (*Communicated by Jonathan Cone and John McEldery.*)	1358	12th May 1870	John Henry Johnson.
Apparatus for lighting and heating purposes -	1467	20th May 1870	Albert Marcius Silber. Frederick White.
Construction of gas stoves - - -	1514	25th May 1870	George Thomas.
Fire-grates - - - - - - -	1521	26th May 1870	Richard Cardwell Robinson.
Ventilating and heating rooms and other places and apparatus therefor.	2075	23rd July 1870	Richard Bailey.
Improved means of dyeing or coloring articles - (*fire-place ornaments.*)	2082	23rd July 1870	Gaudente Sparagnapené.
Improvements in or additions to stoves or fire-places.	2473	14th Sept. 1870	John Large.
Gas stoves for heating and warming rooms and for other like purposes.	2730	17th Oct. 1870	John Stalvies.
Construction and working of furnaces, bakers' oven, fire-places, stoves and stove grates for the purpose of igniting and consuming smoke.	2922	5th Nov. 1870	William Henry Tooth.
Gas stoves or apparatus for cooking and heating purposes.	3162	2nd Dec. 1870	John Joseph Parkes.
Apparatus for lighting and heating purposes - (*stove apparatus.*)	3325	20th Dec. 1870	Albert Marcius Silber.
FIRE-WORKS.			
Rocket projectiles for purposes of war - -	1460	20th May 1870	Addington Taylor.
FISHING; FISHING NETS, LINES AND HOOKS; BREEDING OYSTERS.			
Certain improvements in machines for manufacturing fishing and other nets. (*Communicated by Messieurs Coevoet and Dawson.*)	23	4th Jan. 1870	Henry Bernoulli Barlow.
An improved apparatus for the breeding of oysters	1316	9th May 1870	Bernard Bert.
Improved arrangements and apparatus applicable to trawlers and other vessels for winding wire warps on metal ropes for deep-sea fishing and other purposes. - - - - -	1629	6th June 1870	Samuel Lake. George Kingdon.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FISHING, &c.—*continued.*			
Machinery for making banding (*fishing lines.*)	2254	13th Aug. 1870	Thomas Unsworth. Edward Whalley.
Improvements in hardening steel pens and other steel articles, and in apparatus employed for that purpose. (*fish hooks.*)	3023	18th Nov. 1870	Richard Hipkiss.
FLUES AND CHIMNEYS; CHIMNEY TOPS; CURING SMOKY CHIMNEYS; CHIMNEY WIND GUARDS.			
Improved apparatus for preventing the downward draught in chimnies.	125	15th Jan. 1870	Murray Anderson.
Improvements in fire-places for generating steam and in other furnaces where great heat is required.	387	9th Feb. 1870	John Martin Stanley. William Atkins.
Ventilation of chimneys and apartments	393	10th Feb. 1870	James Thomson. William Thomson.
Cooking ranges (*air-flues.*)	514	22nd Feb. 1870	Hugh Ferguson.
Automatic apparatus for operating the dampers of steam-boilers and of other furnaces.	719	11th March 1870	Francis Brusch.
Chimney tops or caps	937	31st March 1870	Jasper Capper.
Construction of kilns (*construction of flues.*)	983	4th April 1870	James Wood Baker. George Worsnop. John Grainge.
Apparatus for removing soot and other deposit from the tubes of steam-boilers.	999	5th April 1870	Edward Green.
Improvements applicable to fire-places, stoves and grates for ensuring safety against fire and the prevention of smoky chimneys.	1067	12th April 1870	Lewis William Thomas.
Construction of ovens and kilns (*flues.*)	1294	5th May 1870	William Brough, senior. William Brough, junior.
Improvements in steam-boilers and in apparatus connected therewith.	1468	20th May 1870	Gustav Fischer.
Steam-boiler and other furnaces, fire-bars and flues	1651	8th June 1870	George Lodge. George Sheard.
Apparatus for preventing smokey chimnies, and for ventilation generally.	2179	4th Aug. 1870	John Sycamore.
Chimney tops and ventilators	2422	6th Sept. 1870	Thomas Murray Gladstone.
An improved oven for baking biscuits, bread and other aliments.	2607	30th Sept. 1870	Edward Wylam.
Improvements in condensing and cooling the smoke and products of combustion arising from steam-boiler and other furnaces, and in apparatus employed therein.	2670	8th Oct. 1870	Alfred Stansfield Rake.
Construction and manufacture of brushes for cleaning and other similar purposes. (*for sweeping chimneys.*)	2808	25th Oct. 1870	William Henry Edwards. Alfred Edwards.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FIREPLACES, &c.—*continued.*			
Boilers, air heaters, steam condensers and analogous constructions for transferring heat from one fluid to another. (*pipes applied to stoves.*)	1191	25th April 1870	Samuel Dyer Tillman.
Gas cooking stoves - - - - -	1206	26th April 1870	John Palmer.
An improved construction and arrangement of grate bars. (*Communicated by Jonathan Cone and John McEldery.*)	1358	12th May 1870	John Henry Johnson.
Apparatus for lighting and heating purposes -	1467	20th May 1870	Albert Marcius Silber. Frederick White.
Construction of gas stoves - - -	1514	25th May 1870	George Thomas.
Fire-grates - - - - - - -	1521	26th May 1870	Richard Cardwell Robinson.
Ventilating and heating rooms and other places and apparatus therefor.	2075	23rd July 1870	Richard Bailey.
Improved means of dyeing or coloring articles - (*fire-place ornaments.*)	2082	23rd July 1870	Gaudente Sparagnapené.
Improvements in or additions to stoves or fire-places.	2473	14th Sept. 1870	John Large.
Gas stoves for heating and warming rooms and for other like purposes.	2730	17th Oct. 1870	John Stalvies.
Construction and working of furnaces, bakers' oven, fire-places, stoves and stove grates for the purpose of igniting and consuming smoke.	2922	5th Nov. 1870	William Henry Tooth.
Gas stoves or apparatus for cooking and heating purposes.	3162	2nd Dec. 1870	John Joseph Parkes.
Apparatus for lighting and heating purposes - (*stove apparatus.*)	3325	20th Dec. 1870	Albert Marcius Silber.
FIRE-WORKS.			
Rocket projectiles for purposes of war - -	1460	20th May 1870	Addington Taylor.
FISHING; FISHING NETS, LINES AND HOOKS; BREEDING OYSTERS.			
Certain improvements in machines for manufacturing fishing and other nets. (*Communicated by Messieurs Coevoet and Dawson.*)	23	4th Jan. 1870	Henry Bernoulli Barlow.
An improved apparatus for the breeding of oysters	1316	9th May 1870	Bernard Bert.
Improved arrangements and apparatus applicable to trawlers and other vessels for winding wire warps on metal ropes for deep-sea fishing and other purposes. - - - - -	1629	6th June 1870	Samuel Lake. George Kingdon.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FISHING, &c.—*continued.*			
Machinery for making banding (*fishing lines.*)	2254	13th Aug. 1870	Thomas Unsworth. Edward Whalley.
Improvements in hardening steel pens and other steel articles, and in apparatus employed for that purpose. (*fish hooks.*)	3023	18th Nov. 1870	Richard Hipkiss.
FLUES AND CHIMNEYS; CHIMNEY TOPS; CURING SMOKY CHIMNEYS; CHIMNEY WIND GUARDS.			
Improved apparatus for preventing the downward draught in chimnies.	125	15th Jan. 1870	Murray Anderson.
Improvements in fire-places for generating steam and in other furnaces where great heat is required.	387	9th Feb. 1870	John Martin Stanley. William Atkins.
Ventilation of chimneys and apartments	393	10th Feb. 1870	James Thomson. William Thomson.
Cooking ranges (*air-flues.*)	514	22nd Feb. 1870	Hugh Ferguson.
Automatic apparatus for operating the dampers of steam-boilers and of other furnaces.	719	11th March 1870	Francis Brusch.
Chimney tops or caps	937	31st March 1870	Jasper Capper.
Construction of kilns (*construction of flues.*)	983	4th April 1870	James Wood Baker. George Worsnop. John Grainge.
Apparatus for removing soot and other deposit from the tubes of steam-boilers.	999	5th April 1870	Edward Green.
Improvements applicable to fire-places, stoves and grates for ensuring safety against fire and the prevention of smoky chimneys.	1067	12th April 1870	Lewis William Thomas.
Construction of ovens and kilns (*flues.*)	1294	5th May 1870	William Brough, senior. William Brough, junior.
Improvements in steam-boilers and in apparatus connected therewith.	1468	20th May 1870	Gustav Fischer.
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An improved oven for baking biscuits, bread and other aliments.	2607	30th Sept. 1870	Edward Wylam.
Improvements in condensing and cooling the smoke and products of combustion arising from steam-boiler and other furnaces, and in apparatus employed therein.	2670	8th Oct. 1870	Alfred Stansfield Rake.
Construction and manufacture of brushes for cleaning and other similar purposes. (*for sweeping chimneys.*)	2808	25th Oct. 1870	William Henry Edwards. Alfred Edwards.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FLUES, &c.—*continued.*			
Improved methods of and apparatus for utilising the waste and spare or live steam waste, and spare heat and waste, and spare momentum of locomotive and other steam-engines.	2906	3rd Nov. 1870	Thomas Arthur Dillon.
Improvements in or connected with furnaces for boilers, evaporating vessels and stills. - - - (*constructing flues.*)	2949	9th Nov. 1870	Nedrick Jarvie. William Miller. William Calderwood.
Apparatus employed or used in the manufacture of sulphates of soda and potassa. - -	3047	21st Nov. 1870	James Hargreaves. Thomas Robinson.
Improvements in the manufacture of iron and steel and castings of the same, and in apparatus employed therefor. (*Communicated by John Ware Middleton.*)	3087	24th Nov. 1870	George Haseltine.
Boilers or steam generators - - - (*water pockets applied to the flues.*)	3137	30th Nov. 1870	Robert Lees.
Construction of sheet metal elbows or curved pieces for pipes or tubes. (*for stove pipes.*) (*Communicated by Frederick Hoeltge.*)	3143	30th Nov. 1870	George Haseltine.
Steam-boilers - - - - (*cylindrical flues.*)	3249	12th Dec. 1870	John Hosking. John Morrison.
Means of and apparatus for preventing or curing smokey chimneys.	3330	21st Dec. 1870	William Peck Taylor.
Improved means or apparatus for economising fuel (*scrapers for removing soot from flues.*)	3365	24th Dec. 1870	Andrew Bell.
FOOD FOR CATTLE; FODDER-CUTTING; CHAFF-CUTTING; ROOT-PULPING.			
Chaff cutters - - - -	189	21st Jan. 1870	Frederick Charles Southwell.
Treatment of certain substances for food and for manure.	260	28th Jan. 1870	James Dewar.
An improvement in portable chaff engines -	538	24th Feb. 1870	Robert Maynard.
Apparatus for drying grain, malt, roots, spent malt or hops, megass or spent sugar cane, wool and other substances.	966	2nd April 1870	Henry Jackson.
Improvements in mills for grinding cattle food and other materials, and in apparatus connected therewith. - - - -	1189	23rd April 1870	Walkden Thompson. Thomas Stather.
Treatment of maize - - - - (*obtaining cattle food.*) (*Communicated by H. Cavayé and Company.*)	1288	5th May 1870	John Henry Johnson.
Machinery for cutting chaff and other similar vegetable substances.	1298	6th May 1870	James Tester.
Machinery for cutting turnips and other roots -	1478	21st May 1870	Benjamin Perowne.
Machines or apparatus for cutting and pulping turnips and other vegetables.	1881	2nd July 1870	Samuel Corbett.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FOOD FOR CATTLE, &c.—*continued.*			
An improved wind engine or apparatus for obtaining and applying motive-power. (*for cutting chaff.*)	2033	19th July 1870	Charles Horton Plowright. William Plowright.
Preserving vegetable matter	2064	21st July 1870	Robert Thornton Shiells.
Treatment of certain substances for use as food for animals.	2151	2nd Aug. 1870	James Dewar.
Chaff-cutting machines	2564	24th Sept. 1870	Joseph Apsey.
Improved preparations for food for horses, oxen, sheep and pigs.	2676	10th Oct. 1870	John Lawson.
Certain improvements in hay knives	2768	20th Oct. 1870	Isaac Nash.
Apparatus for drying and heating, amalgamating, moulding and compressing, more especially applicable to the manufacture of preserved coal. (*forage biscuit for horses and cattle.*)	2941	8th Nov. 1870	Henry Walker Wood.
Cork cutting knives or apparatus, applicable also to cutting other substances than cork. (*chaff cutters.*)	3010	17th Nov. 1870	Matthew Dodds.
Apparatus for cutting chaff and such like matters	3180	3rd Dec. 1870	Affifi Lely.
Improvements in pulping machinery, specially for cooked cereals.	3181	3rd Dec. 1870	Newton Wilson. Charles Hengst.
Treating lichens or moss in order to obtain sugar or saccharine matter and spirit therefrom. (*and food for cattle.*) (*Communicated by Henry Shield.*)	3250	12th Dec. 1870	John Clayton Mewburn.
FORTIFICATIONS, BATTERIES, SHIPS OF WAR, GUN-BOATS, ARMOUR-PLATED SHIPS.			
Improved means or apparatus for controlling and guiding the movements of torpedo boats, rams and other similar vessels. (*Communicated by John Archibald Ballard.*)	382	9th Feb. 1870	Thomas James Smith.
Ships' illuminators or scuttles (*applicable to men-of-war.*)	619	2nd March 1870	William Darley.
Improvements in the mounting, working and pointing of guns and in the construction of the carriages upon which they are mounted. (*applicable to batteries.*)	647	4th March 1870	Robert Anthony Edward Scott.
Manufacture of armour plates and other heavy forms of malleable iron or steel, or of steel and iron combined.	711	10th March 1870	Joshua Jeavons.
Improvements in the manufacture of bars, plates and sheets of steel, or steel and iron combined, and in the process of welding employed in such manufacture. (*for armour plates.*) (*Communicated by John Absterdam.*)	856	23rd March 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FORTIFICATIONS, &c.—*continued.*			
Improvements in the manufacture of armour plates and in the machinery or apparatus employed in such manufacture. - - - -	869	24th March 1870	Thomas Claridge. Joshua Jeavons.
Improvements in steering gear and in machinery for starting, stopping and reversing heavy steam-engines and turrets, and for discharging cargo.	1018	7th April 1870	Andrew Betts Brown.
Construction of steam and hydraulic rams used in naval warfare.	1796	24th June 1870	William Brown.
Improved means or apparatus for protecting or shielding soldiers in battle.	2192	6th Aug. 1870	Joseph Marsden.
An improved shield or mantelet for field purposes -	2324	2nd Sept. 1870	Creasey Whellams.
Improvements in the construction of ships of war and fortifications, the said improvements being also applicable to garments to be worn by soldiers and sailors in war time.	2606	30th Sept. 1870	John Eiflander.
A new moveable fort - - - -	2639	5th Oct. 1870	Charles William Spruyt de Bay.
An improvement applicable to the stocks of muskets. (*entrenching tool.*) (*Communicated by Richard Jordan Gatling.*)	2744	18th Oct. 1870	Alfred Vincent Newton.
Entrenching or digging tools - - -	2798	24th Oct. 1870	Jasper Henry Selwyn.
An improved mode of protecting troops under fire -	2860	31st Oct. 1870	William Shepard Wetmore.
Improved means for raising and lowering turrets in ships or vessels of war.	2992	15th Nov. 1870	James Shannon.
Improvements in the construction and arrangement of forts or towers and in the mode of working the guns therein.	3046	21st Nov. 1870	Sir Eustace Fitzmaurice Piers.
A new system for constructing iron ships of war, &c. to be impervious to shot, combined with the true and only method for production and resistance of ram power.	3231	9th Dec. 1870	Edmund Beatty Lockyer.
Improved apparatus or combination tool for military and other purposes. (*for digging and shovelling earth.*)	3243	10th Dec. 1870	John Collis Browne.
Armour-plated ships, forts, fortifications and gun shields.	3300	17th Dec. 1870	John Moore Hyde.
Improvements in ships of war and in the working of large guns.	3326	20th Dec. 1870	Frank William Haddan.
Apparatus for raising and lowering the turrets of turret ships.	3370	24th Dec. 1870	John Lawson.
Formation of concrete works - - - (*fortifications.*)	3398	30th Dec. 1870	Philip Brannon.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FRINGING MACHINES.			
Forming or constructing fringes on textile fabrics and in the machinery or apparatus employed therefor.	3012	17th Nov. 1870	John Collins.
FUEL; TREATING COAL; PREPARING FIRE-WOOD; FIRE-LIGHTERS.			
Apparatus for moulding and compressing substances for artificial fuel.	154	19th Jan. 1870	Thomas Patterson Balls.
Improvements in apparatus for and in the treatment of liquid fuel and in the application thereof to prime movers.	194	22nd Jan. 1870	Johann Maximilian Plessner.
Improvements in the production of manure and fuel from sewage or excremental or fecal matter, and in apparatus for such purpose. - -	239	26th Jan. 1870	Maxwell Anketell. Oliver Frederick Anketell.
An improved crushing and disintegrating machine or mill. - - - - (*breaking and grinding coal.*)	377	9th Feb. 1870	Ralph Peacock. Edward Wilson.
Manufacture of artificial fuel - - -	456	16th Feb. 1870	James Bannehr. Henry Matthews.
Improvements in the manufacture of gas and in obtaining residual products from such manufacture and in apparatus to be used in such manufacture. (*burning sulphuretted hydrogen in furnaces.*)	510	21st Feb. 1870	Frank Clarke Hills.
Machinery for compressing artificial fuel - -	516	22nd Feb. 1870	Felix John Hamel.
An improved process for converting human excrement into fuel and manure. - -	580	26th Feb. 1870	Alexander Bobrownicki. Alfred Didier Marie Mesnard, Viscounte De Chousy.
Improvements in apparatus and in combined materials for generating gases for extinguishing fires in mines, vessels, buildings or other places, such apparatus being available for warming buildings or apartments. (*mixing fuel.*)	642	4th March 1870	Thomas Atkins.
Direct-acting power hammers and machinery for crushing and pulverising. - - - (*crushing coal.*)	715	10th March 1870	Samuel Chatwood. John Sturgeon.
Improvements applicable to steam-boiler, smelting, reverberating and other furnaces. (*consuming liquid fuel.*)	741	14th March 1870	William Payne.
Improvements in friction lights and in apparatus to be employed therewith. (*fire-lighters.*)	755	15th March 1870	William Henry Samuel.
Manufacture of fire-lighters - - -	788	17th March 1870	George Buck.
Manufacture of peat charcoal - - -	919	29th March 1870	Jean Baptiste Passedoit. Louis Antoine Ritterbandt.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FUEL, &c.—*continued.*			
Improvements in the production of artificial fuel and in apparatus to be employed for such purpose. (*Communicated by the Anthracite Fuel Manufacturing Company (Incorporated).*)	928	30th March 1870	John Henry Johnson.
A new automaton vase or depot for holding coals or other substances.	1241	30th April 1870	Absalom Evans.
Improvements in obtaining and applying heat and in furnaces employed therein, also in utilizing a product resulting therefrom. (*obtaining gaseous fuel.*)	1304	6th May 1870	Thomas Don.
An improvement in machines for working and preparing peat for fuel. (*Communicated by Charles Luxton.*)	1594	1st June 1870	Alexander Melville Clark.
Coal vases - - - - -	1711	15th June 1870	Charles Hayward Perman.
Improvements in the manufacture and fusion of cast iron and in the apparatus connected therewith. (*using gas for heating.*)	1712	15th June 1870	Aristide Balthazard Bérard.
Improved bellows for lighting fires - - (*see* "AIR-SUPPLYING.")	1717	15th June 1870	Joachim Fossard.
Manufacture of peat charcoal - - - (*for fuel.*) (*Partly communicated by Jean Baptiste Passedoit.*)	1743	17th June 1870	Louis Antoine Ritterbandt.
Means of producing and regulating motive-power -	1859	30th June 1870	John Bourne.
Manufacture of faggots or fire lighters - -	1885	4th July 1870	Frederick Livèrati Rovedino. Henry Boucher.
Manufacture and melting of iron and steel - (*using gaseous fuel.*)	2028	19th July 1870	John Frederick Parker. Edwin Sunderland.
New or improved instruments or apparatus for lighting fires.	2131	29th July 1870	George Turton.
Apparatus for separating, cleaning, classifying coal, ore, grain and other solid substances.	2187	6th Aug. 1870	George William Hick.
Artificial fuel - - - - - -	2337	25th Aug. 1870	Perceval Moses Parsons.
Manufacture of fuel - - - -	2622	3rd Oct. 1870	Thomas Clemitson. John Deere.
Improved apparatus and fuel for facilitating the soldering of the joints of electric telegraph and other wires.	2658	7th Oct. 1870	John William Fletcher.
Preparation and use of peat or turf, and bituminous, resinous and ligneous substances, as fuel and for other purposes. (*fire-lighters.*)	2831	27th Oct. 1870	Jacob Geoghegan Willans.
Manufacture of artificial fuel - - -	2873	1st Nov. 1870	Robert Walker.
Apparatus for drying and heating, amalgamating, moulding and compressing, more especially applicable to the manufacture of preserved coal.	2941	8th Nov. 1870	Henry Walker Wood.
An improved construction of fire-igniter - -	2990	15th Nov. 1870	Thomas Dawson.
Safes or receptacles designed to serve as coal boxes, as show cases for shops and for other like purposes. (*Communicated by Benjamin Richard Deacon.*)	3016	17th Nov. 1870	George Haseltine.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FUEL, &c.—*continued.*			
Manufacture of faggots or fire-lighters	3091	25th Nov. 1870	Frederick Liverati Rovedino. Henry Boucher.
Apparatus for moulding or shaping clay and other plastic materials for the production of bricks, tiles and other articles. (*moulding fuel.*)	3251	12th Dec. 1870	George William Hick.
Improvements in dressing cannel coal and other minerals, and in apparatus employed for that purpose.	3333	21st Dec. 1870	William Firth.
See also "CHARCOAL."			
FULLING AND FELTING; FELTED FABRICS; FLOCK, WADDING.			
Improvements in ornamenting woven and felted fabrics and in apparatus employed therein.	210	22nd Jan. 1870	John William Eyres. John Longbottom.
A new method or methods for extracting and purifying mill waste, refuse flock material, and removing dyed colours and re-dying the same into other colours for re-manufacture, for using certain agents employed in the process, and thereby making a manure. (*obtaining flock.*)	530	23rd Feb. 1870	George Rydill.
Improvements in the manufacture of yarns and fabrics containing horse hair, and in means or methods for shaping and utilising fabrics containing the same or analogous stiffening material. (*felt.*)	604	1st March 1870	Henry Hayward.
Carding engines for carding hemp, flax, tow, china grass, wool, silk, cotton and all other fibrous substances, both animal and vegetable, also for carding the waste of flax, hemp and tow, whether hard or soft waste, as well as cotton waste, cop bottoms, waste yarns or any other waste or yarns, the produce of any fibrous substances, either animal or vegetable, also for pulling and carding carpets, stockings, hosiery, rags, fents, or remnants of any textile or felted or knitted fabrics of hemp, flax, tow, china grass, wool, silk, cotton, or other fabric, the produce of any fibrous substances, either animal or vegetable. (*for felting.*)	734	12th March 1870	Jonas Brown.
Machinery for felting hat bodies	851	23rd March 1870	James Bradbury. John Bradbury. John Roberts.
Improvements in machinery or apparatus for felting or "planking" the bodies of hats or other coverings for the head, which improvements are also applicable to other felting purposes.	1059	12th April 1870	James Kirk. Samuel Skelmerdine. Cephas Froggatt.
Construction of partitions or walls (*of felt and millboards.*)	1106	14th April 1870	Charles Beard.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FULLING, &c.—*continued.*			
Machinery for forming bats of wool for felting purposes. (*Communicated by Lyman Robinson.*)	1516	25th May 1870	John Falconer.
Improvements in or applicable to milling or fulling and washing machines.	1632	6th June 1870	Alfred Johnson.
Treatment of slag and other vitreous material - (*used as hair felt or cotton wadding.*) (*Communicated by Henry Baldwin, jun.*)	1644	7th June 1870	George Tomlinson Bousfield.
An improved mode of forming bats of wool for felting purposes. (*Communicated by John Falconer.*)	1708	14th June 1870	Alfred Vincent Newton.
Water-pressure machinery to be used in the manufacture of hats and other articles. (*felt ornaments.*)	2261	15th Aug. 1870	Edward Colston Williams.
Machinery or apparatus for goffering and fulling or wrinkling textile fabrics. (*see* "MANGLING.")	2287	18th Aug. 1870	Edwin John Grabham.
Improvements in saddle-cloths and horse clothing and blankets, and in ponchos or other coverings for man and beast. (*of felted fabrics.*) (*Communicated by Robert Spencer.*)	2743	18th Oct. 1870	William Edward Newton.
Machinery for "planking" or felting hat bodies, applicable also to some other purposes.	2759	20th Oct. 1870	Firth Garside.
Machinery or apparatus for hardening felt hat bodies and other coverings for the head.	2853	29th Oct. 1870	Joseph Vero.
Manufacture of padded or wadded quilts or other padded or wadded articles for wearing-apparel or other purposes.	2961	10th Nov. 1870	Benjamin Lockwood.
Machinery for preparing and washing wool and other fibrous materials, and for mixing and forming fur or materials for felt hat bodies. - (*feeding machines.*)	3038	21st Nov. 1870	John Charles Edwards. John Taft.
Machinery or apparatus for felting hat bodies and other articles or materials requiring to be felted.	3055	22nd Nov. 1870	Charles Samuel Royle.
Machinery or apparatus for felting or planking hat bodies or other articles made of felt. - -	3121	29th Nov. 1870	Joseph Bowden. Robert Shaw.
An improved fabric suitable for carpet linings and other purposes, and improved machinery for manufacuring the same. (*wadding and paper.*)	3218	7th Dec. 1870	William Henry Maitland.
Application of felt in making carpets, hearth-rugs, mats, cushions and such like articles.	3233	9th Dec. 1870	Thomas Grason.
An improvement in the manufacture of felted cloth	3291	16th Dec. 1870	Samuel Bartlemore Birtill.
Improvements in medicating cotton and other fibres for sanitary and surgical purposes, and in machinery employed therein. - - - (*felt cloths and wadding charged with medical agents.*)	3367	24th Dec. 1870	John Gamgee. William Henry Maitland.
Improvements in the manufacture of felted fabrics, and in the machinery or apparatus employed therein. (*Communicated by Robert Spencer.*)	3404	31st Dec. 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FURNACES AND FIRE-BOXES; SUPPLYING FURNACES WITH FUEL.			
An improved gas stove, part of which is also applicable to blow pipes and forges.	15	3rd Jan. 1870	Thomas Charles Olney.
Regenerative hot-blast stoves for heating air, steam and other gases. - - - - -	34	5th Jan. 1870	Charles William Siemens. Edward Alfred Cowper. Charles Cochrane.
Furnaces - - - - - - (*for boilers, &c.*)	74	10th Jan. 1870	Walter Watson Hughes.
Apparatus for puddling iron, applicable also as tuyeres for metallurgical furnaces generally. (*Communicated by Auguste Ponsard.*)	81	11th Jan. 1870	John Henry Johnson.
Steam-boiler and other furnaces - - - -	117	13th Jan. 1870	William Thornley. Samuel Spencer. Joseph Wright.
Improvements in the construction of steam and other boilers and in apparatus used therewith for economising heat, condensing steam and saturating heated air.	124	15th Jan. 1870	James Wadsworth.
Apparatus for the prevention of smoke in steam-boiler and other furnaces.	136	17th Jan. 1870	Thomas Taylor.
Improvements in steam-engines and in the boilers and furnaces to be used therewith.	166	19th Jan. 1870	Edward Wood.
Improvements in the preparation of iron ores for smelting and in kilns or furnaces employed for that purpose.	176	20th Jan. 1870	Charles Cochrane.
Producing heat and light - - - - - (*constructing steam-boiler furnaces.*)	228	25th Jan. 1870	Cromwell Fleetwood Varley. Theodore Anthony Rochussen.
Improvements in furnace grates and in apparatus connected therewith for heating water for steam-boilers and for other like purposes. (*Communicated by Charles Emery Hutson.*)	235	26th Jan. 1870	William Robert Lake.
Improvements applicable to steam-boiler and other furnaces. - - - - - -	292	1st Feb. 1870	Joshua Fisher. Henry Fisher.
Improvements in treating iron ores and in the furnaces or ovens employed for such purpose.	328	4th Feb. 1870	Alexandre Le Brun-Virloy.
Improvements in fire-places for generating steam and in other furnaces where great heat is required. - - - - - -	387	9th Feb. 1870	John Martin Stanley. William Atkins.
An improved method of consuming smoke and economizing fuel in steam-boiler and other furnaces. - - - - - -	421	12th Feb. 1870	John Botterill. John Botterill, the younger.
Glass and other furnaces - - - - -	460	16th Feb. 1870	John Dawson. Nathaniel Grace Lambert.
Construction of furnaces to effect consumption of smoke and saving of fuel.	490	19th Feb. 1870	George Jones.
Improved apparatus for heating knives for reaping and mowing machines in order to the partial hardening of such knives. - - - - (*constructing the furnaces.*)	502	21st Feb. 1870	Samuel Osborn. William Henry Fawcett.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FURNACES, &c.—*continued.*			
Machines for removing paint from wood - -	505	21st Feb. 1870	Samuel Hulme.
Construction of furnaces for steam-boilers -	561	25th Feb. 1870	Samuel Moorhouse.
Improvements in the manufacture of wrought metal wheels and in machinery for the same. (*Communicated by Claude Brunon, Barthélemy Brunon and Gabriel Brunon.*)	583	26th Feb. 1870	Alexander Melville Clark.
Improvements in treating iron ores and in processes and apparatus for the production of cast steel where such ores are employed.	594	28th Feb. 1870	Charles William Siemens.
Improvements in apparatus and in combined materials for generating gases for extinguishing fires in mines, vessels, buildings or other places, such apparatus being available for warming buildings or apartments.	642	4th March 1870	Thomas Atkins.
Apparatus for burning and consuming smoke -	657	5th March 1870	Edwin Bray. John Crosby Hargreaves. Francis Henry Stubbs.
Puddling and balling furnaces - - -	660	5th March 1870	Stephen Meredith.
Preparing and treating auriferous and argentiferous ores. - - - - - - -	667	7th March 1870	George Holcroft. Robert Martin Roberts.
Improved steam-boilers and furnaces utilizing the lost heat of lime, cement, brick or other circular or other kilns.	670	7th March 1870	Pierre Joseph Robine.
Improved apparatus for injecting and reducing liquids to a state of spray or minute subdivision. (*for supplying oil as fuel.*) (*Communicated by Alcide Sanial du Fay.*)	673	7th March 1870	William Edward Newton.
Improved apparatus for generating steam or elastic vapours for actuating motive-power engines. (*Communicated by Jean Baptiste Givord.*)	691	8th March 1870	William Edward Newton.
An improved arrangement of furnace and boiler for the generation of steam.	692	9th March 1870	Joseph Hopkinson.
Improvements in smelting iron ore and in furnaces employed therein.	697	9th March 1870	George Fowler.
Improvements in or applicable to steam-boiler and other furnaces for promoting the consumption of smoke. - - - - -	704	10th March 1870	Robert Blakeborough. Solomon Sanderson.
Automatic apparatus for operating the dampers of steam-boilers and other furnaces.	719	11th March 1870	Francis Brusch.
Improvements in vulcanizers or apparatus employed in vulcanizing india-rubber, which improvements may also be applied to the regulation of the flow of gas for various purposes.	726	11th March 1870	Charles Jackson.
Improvements applicable to steam-boiler, smelting, reverberating and other furnaces.	741	14th March 1870	William Payne.
Means or apparatus for regulating the flow of air into steam-boiler and other furnaces.	743	14th March 1870	John Glover.
Improvements in the construction of furnaces, and in the method of manufacturing malleable and crucible steel and iron. - - -	759	15th March 1870	John Solomon Atkin. Isaac Deeley. Francis Newbery.
Locomotive and other steam-boilers having fire-boxes.	801	18th March 1870	Stanhope Perkins.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FURNACES, &c.—*continued.*			
Steam-boilers	810	18th March 1870	Sir William Fairbairn, Baronet.
Improvements in steam-boiler and other furnaces, applicable in part to fire-grates and stoves of various kinds.	865	24th March 1870	Joseph Sawyer. John Brindley.
Machinery or apparatus for heating and delivering metal bars. (*Communicated by Samuel A. Darrach.*)	887	26th March 1870	Albert Angell.
Means of and apparatus for consuming smoke (*in steam-boiler furnaces.*)	910	29th March 1870	Richard Guest Rainforth.
Improvements in the production of artificial fuel and in apparatus to be employed for such purpose. (*furnaces.*) (*Communicated by the Anthracite Fuel Manufacturing Company (Incorporated).*)	928	30th March 1870	John Henry Johnson.
Steam boiler furnaces for economising fuel and consuming smoke.	1002	6th April 1870	John McNaught. William McNaught, jun.
Construction of retorts, muffles, pots and furnaces for reducing zinc and other ores.	1113	16th April 1870	Alfred Borgnet.
Improvements in applying heat and in apparatus for applying heat in various chemical and other operations, such as roasting, oxidising, calcining, decomposing and volatilising. (*feeding the fuel.*)	1124	18th April 1870	Joseph Townsend.
Manufacture of coke and the apparatus connected therewith. (*for blast furnaces.*)	1149	20th April 1870	Jonathan Green.
Fire-bars	1156	20th April 1870	William Batchelor.
Heating stoves or furnaces	1163	21st April 1870	Maurice Chapman Hull.
Improvements in the means of and apparatus for crushing ores and other mineral substances, and separating therefrom the metals which they contain, part of which improvements is applicable to the bearings of machinery generally. (*furnaces for calcining ores.*)	1198	25th April 1870	Leonard Wray.
Steam-boilers and the furnaces thereof	1217	27th April 1870	James Burnley. William Nichols.
Means of and apparatus for generating and heating steam in steam-boilers and other vessels, and for heating the liquid contents thereof.	1245	30th April 1870	Owen Murrell.
Machinery for puddling	1280	4th May 1870	Benjamin Walker. John Frederick Augustus Pflaum.
Furnaces and boilers	1290	5th May 1870	Thomas Ellis.
Apparatus or arrangements for preventing or reducing the production of smoke in furnaces.	1299	6th May 1870	David Walker.
Manufacture and application of a composition or compositions for preserving the surfaces of walls, metals, wood and other materials. (*covering furnace brick-work.*)	1379	14th May 1870	Prosper Pimont.
New perforated fire bars applicable to locomotive and steam-boilers.	1337	11th May 1870	Frederick Broughton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FURNACES, &c.—*continued.*			
An improved construction and arrangement of grate bars. (*Communicated by Jonathan Cone and John McEldery.*)	1358	12th May 1870	John Henry Johnson.
Improvements in obtaining and applying heat and in furnaces employed therein, also in utilizing a product resulting therefrom.	1304	6th May 1870	Thomas Don.
Improvements in furnaces and in apparatus connected therewith.	1406	16th May 1870	Dillwyn Smith.
Manufacture of iron - - - -	1409	17th May 1870	Edwin Francis Jones.
Construction and arrangement of steam-boilers - (*obtaining larger heating surfaces.*)	1416	17th May 1870	Edward Green.
Furnaces - - - - - -	1427	18th May 1870	William Waller.
Improved means or apparatus for admitting and regulating the supply of air to steam-boiler and other furnaces. - - - - -	1446	19th May 1870	John Addy Hopkinson. Joseph Hopkinson, junr.
Apparatus for lighting and heating purposes - (*heating furnaces.*)	1467	20th May 1870	Albert Marcius Silber. Frederick White.
Improvements in steam-boilers and in apparatus connected therewith. (*flues used as fire chambers.*)	1468	20th May 1870	Gustav Fischer.
Improvements in regenerative gas furnaces and apparatus connected therewith for the manufacture of glass, also partly applicable to regenerative gas furnaces generally. (*Partly communicated by Frederick Siemens.*)	1513	25th May 1870	Charles William Siemens.
Improvements in blast and other furnaces, and in extracting metals from their ores and from metallurgical products, in separating and refining such metals and in the means and apparatus employed for such purpose.	1527	26th May 1870	Julian Bernard.
Converters for the manufacture of steel and other metals, refining oil and other liquids.	1528	26th May 1870	James Webster.
Steam-boilers - - - -	1533	26th May 1870	William Arnold. William Carnelley.
An improved furnace or apparatus for consuming creosote and other hydrocarbons for the production of heat.	1535	26th May 1870	William Malam.
Furnaces for metallurgical purposes - - (*Communicated by Auguste Ponsard.*)	1624	4th June 1870	John Henry Johnson.
A new or improved boiler and furnace for heating churches, public buildings, conservatories and other like purposes.	1627	4th June 1870	John Gabb.
Improvements in the grate bars and other parts of steam-boiler and other furnaces.	1636	6th June 1870	Thomas Lishman.
Treatment of slag and other vitreous material - (*Communicated by Henry Baldwin, jun.*)	1644	7th June 1870	George Tomlinson Bousfield.
Steam-boiler and other furnaces, fire-bars and flues. - - - - -	1651	8th June 1870	George Lodge. George Sheard.
Improvements in the manufacture and fusion of cast iron, and in the apparatus connected therewith.	1712	15th June 1870	Aristide Balthazard Bérard.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FURNACES, &c.—*continued.*			
Construction of furnaces for the manufacture of iron and steel.	1723	16th June 1870	Josiah Swain.
Bridges of the furnaces of steam-boilers or generators or of other furnaces. - - -	1772	22nd June 1870	Isaac Bates. John Taylor.
Apparatus for making Bessemer steel - -	1784	22nd June 1870	Alexander Lyman Holley.
Improvements in smelting iron and other ores and in the apparatus employed therefor. (*blast furnaces.*)	1790	23rd June 1870	Andrew Barclay.
Apparatus for lowering weights - - (*lowering charges into blast furnaces.*)	1803	24th June 1870	Thomas Wrightson.
Improvements in steam generators and in furnaces therefor. (*Communicated by S. Lloyd Wiegand.*)	1856	30th June 1870	William Robert Lake.
An improved process and apparatus for chlorinating gold, silver and copper ores. (*Communicated by Charles Stetefeldt.*)	1857	30th June 1870	William Robert Lake.
Improvements applicable to the furnaces of steam-boilers.	1864	30th June 1870	Chas. Neale May.
Construction and regulation of boilers for heating buildings.	1889	4th July 1870	Ambrose Marriott.
Mechanical appliances and furnaces and a process employed therewith for separating and reducing iron or iron ores, and for other metallurgical operations. (*Communicated by John Y. Smith.*)	1904	5th July 1870	William Robert Lake.
Furnaces chiefly designed for heating metals and ores. (*Communicated by William A. Sweet.*)	1914	6th July 1870	William Robert Lake.
An improved hot-air engine - - - (*construction of furnace.*)	1945	9th July 1870	Thomas Tertius Chellingworth.
Apparatus for pumping and forcing air and other fluids, and which apparatus is peculiarly applicable to desiccating the ventilation of mines, buildings, ships and other structures, and for blast and other purposes.	1976	13th July 1870	William Cowley.
Fire-bars and grates - - - - (*Communicated by Ernest Mekl.*)	1995	14th July 1870	Alfred Wenner.
Improvements in or additions to puddling furnaces, heating furnaces, balling furnaces and other furnaces used in the manufacture of iron and steel.	2004	15th July 1870	James Russell.
Improvements in repairing worn or damaged rails of permanent way, and in the combination and arrangement of machinery or apparatus employed therein. (*furnaces.*)	2009	15th July 1870	Hugh Baines.
Manufacture and melting of iron and steel -	2028	19th July 1870	John Frederick Parker. Edwin Sunderland.
Improvements in the manufacture of iron and steel and in furnaces to be used in such manufacture, partly applicable to the smelting of lead and copper ores.	2036	19th July 1870	Joseph Henderson.
Manufacture of iron - - -	2044	20th July 1870	William Robinson.
Ovens - - - - (*Communicated by Hosea Ball.*)	2052	20th July 1870	Benjamin Joseph Barnard Mills.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FURNACES, &c.—*continued.*			
Improved means and apparatus for regulating the admission of air to steam-boiler and other furnaces.	2099	26th July 1870	Charles Gall.
Manufacture of railway wheels, also in the moulds and the converting furnaces to be used in the manufacture of railway wheels. (*Communicated by John Blake Tarr.*)	2102	26th July 1870	Alfred Vincent Newton.
Improvements in furnace grates and in apparatus connected therewith for heating water for steam boilers and for other like purposes. (*Communicated by Charles Emery Hutson.*)	2112	27th July 1870	William Robert Lake.
Manufacture of iron and its alloys - -	2130	29th July 1870	Jacob Geoghegan Willans.
Improvements in calcining and reducing iron ores and in furnaces or kilns employed in connection therewith, which improvements are applicable chiefly to the production of cast steel.	2134	30th Nov. 1870	Charles William Siemens.
Construction of furnaces for preventing or lessening smoke and effecting more perfect combustion of the fuel employed therein. - - -	2135	30th Nov. 1870	Thomas Hydes. John Emil Bennett.
Improvements in the production of certain metallic alloys and in furnaces employed in the process. -	2204	9th Aug. 1870	Joseph Andrew Keates. John Fenwick Allen.
Apparatus for regulating the supply of air to furnaces.	2227	11th Aug. 1870	Thomas Symes Prideaux.
An improvement in furnaces - - -	2253	13th Aug. 1870	Robert Ramsden.
Improvements in apparatus for economizing the waste heat and gases from furnaces, and in means for generating, collecting and purifying gases, such gases being applicable to various useful purposes. (*increasing combustion in furnaces.*)	2377	31st Aug. 1870	Thomas Atkins.
Smoke-preventing apparatus - - -	2379	31st Aug. 1870	Otto Gjerdrum.
Rotary puddling furnaces - - - (*Communicated by Samuel Danks.*)	2397	2nd Sept. 1870	George Haseltine.
Puddling and balling furnaces - - -	2404	3rd Sept. 1870	Stephen Meredith.
Construction of fire-bars, and for the employment of them for heating the feed for generating steam, and for keeping the bars cool.	2459	12th Sept. 1870	Charles Stephens.
Blast furnaces - - - -	2551	23rd Sept. 1870	Andrew Barclay.
Steam-boiler and other furnaces and stoves -	2557	23rd Sept. 1870	John Tatem Rich.
Means of and apparatus for consuming smoke -	2589	29th Sept. 1870	Richard Guest Rainforth.
Furnaces suitable for melting and heating metals and for other purposes.	2600	30th Sept. 1870	Thomas Russell Crampton.
An improved oven for baking biscuits, bread and other aliments.	2607	30th Sept. 1870	Edward Wylam.
Furnaces for steam-boilers and other purposes - (*hollow bars.*)	2629	3rd Oct. 1870	Ellis Butterworth.
Apparatus for ventilating stoke holes and engine rooms of steam ships. - - - (*and ensuring draft to the furnace.*)	2643	5th Oct. 1870	William Rudd Oswald. George Hough.
A continuous process for treating the ores of metals and the apparatus and mechanical appliances used therein. (*Communicated by Robert Spencer.*)	2668	8th Oct. 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FURNACES, &c.—*continued.*			
Improvements in condensing and cooling the smoke and products of combustion arising from steam boiler and other furnaces and in apparatus employed therein.	2670	8th Oct. 1870	Alfred Stansfield Rake.
Construction of cupola furnaces - -	2686	11th Oct. 1870	Peter Newland.
Certain improvements in the mode of and apparatus for charring wood, peat, bones and other vegetable and animal matters. (*furnace.*)	2714	14th Oct. 1870	Frederick Ludewig Hahn Danchell.
Construction of furnaces for burning coals or other combustibles.	2717	14th Oct. 1870	John Jordan.
Production of motive-power and appliances connected therewith. - - - - -	2729	17th Oct. 1870	George Bell Galloway. George Thomas Galloway.
Grate bars - - - - -	2794	24th Oct. 1870	William Fox.
Multitubular steam-boilers - - -	2802	25th Oct. 1870	John Colpman Bradshaw, the younger.
Improvements in the manufacture of sulphuric acid and in apparatus connected therewith.	2823	27th Oct. 1870	Peter Spence.
Furnaces for boiling "worts" or other liquors -	2842	28th Oct. 1870	James Rennie. Thomas Halliday.
Treating cast iron so as to improve and secure uniformity of quality.	2889	2nd Nov. 1870	William Henderson.
Improved methods of and apparatus for utilising the waste and spare or live steam waste and spare heat, and waste and spare momentum of locomotive and other steam-engines.	2906	3rd Nov. 1870	Thomas Arthur Dillon.
Improvements in puddling furnaces and in the preparation and application of certain materials for building and fettling the same.	2913	4th Nov. 1870	Frederick Francis Jones.
Construction and working of furnaces, bakers' oven, fire-places, stoves and stove grates for the purpose of igniting and consuming smoke.	2922	5th Nov. 1870	William Henry Tooth.
Improvements in or connected with furnaces for boilers, evaporating vessels and stills. -	2949	9th Nov. 1870	Nedrick Jarvie. William Miller. William Calderwood.
Furnaces - - - - -	3008	17th Nov. 1870	Hugh Wallace.
Apparatus for automatically supplying fuel to furnaces.	3017	17th Nov. 1870	George Frederick Deacon.
Furnaces - - - - - -	3021	18th Nov. 1870	Julius Frölich.
Improvements in hardening steel pens and other steel articles and apparatus employed for that purpose.	3023	18th Nov. 1870	Richard Hipkiss.
Furnaces for smelting iron - - -	3054	22nd Nov. 1870	Richard Brown.
Certain furnaces used in the manufacture of iron -	3065	24th Nov. 1870	William Beardmore.
Improvements in the manufacture of iron and steel and castings of the same and in apparatus employed therefor. (*Communicated by John Ware Middleton.*)	3067	24th Nov. 1870	George Haseltine.
Improvements in the manufacture of iron and steel and in furnaces and apparatus to be used in the said manufacture, parts of which improvements may also be applied to other purposes.	3099	25th Nov. 1870	Thomas Callender Hinde.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FURNACES, &c.—*continued.*			
Improvements in condensing steam, in precipitating and reducing heat and smoke and in apparatus therefor.	3123	29th Nov. 1870	Matthew Burnett.
Boilers or steam generators - - -	3137	30th Nov. 1870	Robert Lees.
Furnaces and apparatus to be used in the manufacture of glass. - - - - -	3166	2nd Dec. 1870	Samuel Bishop. Charles Bishop.
An improved process of separating precious metals from lead and zinc and apparatus employed therefor. (*Communicated by Edward Balbach, jun.*)	3175	3rd Dec. 1870	George Haseltine.
Blast furnaces - - - - - -	3187	3rd Dec. 1870	James Hunter.
Construction of boilers for locomotive engines - (*Communicated by Mr. Becker.*)	3224	8th Dec. 1870	John Clayton Mewburn.
Puddling, heating and other furnaces - -	3282	15th Dec. 1870	Dougald McCorkindale.
An improved mode of generating steam for the purposes of the steam-engine.	3284	15th Dec. 1870	Humphrey Henchman.
Furnaces - - - - - - - (*for steam-boilers, &c.*) (*Communicated by Carl Wittenstrom.*)	3292	16th Dec. 1870	John Donald.
Improvements in blast furnaces and in the employment of the waste gases thereof.	3327	20th Dec. 1870	James Hunter.
Furnaces - - - - - - -	3328	20th Dec. 1870	Jacob Geoghegan Willans.
Improved furnaces for melting and puddling iron or steel, and for heating iron, steel and other metals.	3337	21st Dec. 1870	Andrew Howatson.
Improvements in furnace doors and in apparatus connected therewith.	3383	28th Dec. 1870	David Auld, the younger.
Improvements in steam generators and in furnaces therefor. (*Communicated by S. Lloyd Wiegand.*)	3390	29th Dec. 1870	William Robert Lake.
FURNITURE; BEDSTEADS, TABLES, CHAIRS, CRADLES AND NURSING-APPARATUS; CASTORS; BEDSTEAD-BOTTOMS, DESKS.			
Improvements in spring seats, chairs and mattresses, such improvements being also applicable to other purposes. (*Communicated by Pierre Gustave Nourissé.*)	69	8th Jan. 1870	Alexander Melville Clark.
Improved apparatus for diminishing the effects of the oscillation of vessels and for preventing sea sickness. (*balanced couches or sofas.*) (*Communicated by Lorenzo Dow Newell.*)	157	19th Jan. 1870	Edward Thomas Hughes.
Improvements in apparatus for the passage and control of cables and other chains and in apparatus for auxiliary propulsion. (*tubular iron hammock bedsteads.*)	175	20th Jan. 1870	James Maze Kilner.
A new or improved safety cage for children -	296	1st Feb. 1870	Henry Collins.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FURNITURE, &c.—*continued.*			
Nails for coffins, articles of furniture and other uses	310	2nd Feb. 1870	Alfred William Theophilus Baker.
Spring bed bottoms - - - - (*Communicated by Robert Barker, Stephen Albro Barker and Louis Fisher.*)	320	3rd Feb. 1870	William Robert Lake.
Manufacture of chairs and other seats - - (*Communicated by Wilhelm Walcker.*)	330	4th Feb. 1870	Thomas James Smith.
An improvement in the manufacture of quilts, counterpanes, table or toilet covers and other similar fabrics. - - - - - (*see* "WEAVING.")	359	8th Feb. 1870	Henry Bond. Joseph Riley.
Improvements in the production of photographic pictures or designs on veneers and solid wood, and in the application thereof to cabinet work, furniture, fancy wood articles and other decorative purposes. - - - - - (*table tops, &c.*)	383	9th Feb. 1870	Arthur Foley. Henry Foley.
Spring seats and bed bottoms - - - (*Communicated by John Lorenzo Whipple.*)	407	11th Feb. 1870	William Robert Lake.
Infants' beds or bassinettes - - -	482	18th Feb. 1870	Bradly Barnard.
Billiard and bagatelle tables - - -	484	18th Feb. 1870	Edwin Chafer.
Improved methods of constructing, converting and using billiard and other tables.	576	26th Feb. 1870	Robert Jekyll Westley.
Improvements in or applicable to chairs, sofas and to all kinds of seats with or without backs.	648	4th March 1870	Alexander Friderich Wilhelm Louis.
Castors - - - - - - -	650	5th March 1870	Jonathan Pickering.
An improved combined washing machine and ironing table. (*or kitchen table.*)	909	28th March 1870	Otis Henry Weed.
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation and preserving wood and other materials. (*for polishing furniture.*)	986	4th April 1870	Achille Thomas Anquetil.
An improved stand or frame for containing paper, pens, ink and other stationery in combination with a thermometer and other articles for offices and counting-houses.	1016	6th April 1870	Charles H. Wight.
Ornamenting wood, leather and other materials for the manufacture of fancy boxes, furniture, panellings, and for other ornamental purposes.	1058	11th April 1870	Archibald Brown.
Bedsteads, whereby they may be rendered available as an escape in case of fire.	1085	13th April 1870	Charles Hamilton.
An improved folding bed table for the use of invalids and others.	1127	18th April 1870	Thomas McIsaac.
Production of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials. (*for cabinet work.*)	1159	20th April 1870	George William Ley.
An improved adjustable bedstead - - - (*Communicated by William Orr Reid.*)	1164	21st April 1870	Alfred Vincent Newton.
Travelling bags and portmanteaus - - - (*or camp stools.*)	1193	25th April 1870	Frederick Daniel Sutherland.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FURNITURE, &c.—*continued.*			
Improvements in attaching door and other knobs and handles to spindles, and in the manufacture of door and other knobs and handles, parts of which improvements may be applied to the manufacture of the terminal ornaments of metallic furniture and other articles.	1232	29th April 1870	Ernest Wentworth Buller.
Construction and manufacture of school furniture and other similar articles. (*tables, desks, cupboards, drawers, &c.*)	1400	16th May 1870	John Henry Banks.
Improvements in the manufacture of welded iron or steel tubes and in the means or apparatus employed in such manufacture. (*for bedsteads.*)	1435	18th May 1870	Edward Peyton.
Manufacture of metallic bedsteads, sofas, couches or other articles for sitting or reclining upon.	1436	18th May 1870	Edward Peyton.
Construction of school furniture, also applicable to other purposes.	1441	19th May 1870	Benjamin Cornford Muzzall.
Furniture springs for seats, mattresses and other similar articles. (*Communicated by John Perlee Ryan.*)	1604	2nd June 1870	William Edward Newton.
Hinges - - - - - - - (*for desk lids.*)	1630	6th June 1870	William McLean.
Construction of cabinets, stands or receptacles for sewing-machines. (*Communicated by Messrs. Pollack, Schmidt and Company.*)	1677	9th June 1870	Johannes Heinrich Ludwig Theodor Pörtner.
Improvements in wardrobes, which improvements are applicable to other articles of furniture and to the fitting of show and such like rooms.	1759	21st June 1870	William Rainford.
Improvements in the manufacture of artificial stone and in articles composed thereof. (*billiard and bagatelle tables.*)	1822	27th June 1870	William Bennet Adamson.
Manufacture of certain ornamental and useful articles, such as buttons, studs or other attachments for dress, knobs for doors and drawers, chair nails, harness mounts and for various other purposes analogous to these. - - -	1902	5th July 1870	John William Hoffman. Frederic Arthur Harrison.
Manufacture and construction of india-rubber cushions for billiard tables.	1975	13th July 1870	Charles Moseley.
Machinery or apparatus for reducing wood, metal or other hard material to fixed patterns. (*chair rounds, chair and table legs, &c.*) (*Communicated by Frederick Baldwin.*)	1987	14th July 1870	Giovanni Sconcia.
Mechanism arranged in combination with the locks of boxes, dressing and other cases, desks, drawers, cupboards or other similar receptacles to facilitate the opening thereof. - - - -	2037	20th July 1870	John Dyus. George John Parry.
Furniture castors - - - - - -	2128	29th July 1870	Thomas Walker. George Walker. Alfred Albert Walker.
Apparatus for fastening and securing cupboards or receptacles for containing poisons or other chemical preparations, which invention is also applicable to other similar purposes.	2175	4th Aug. 1870	John Clarkson Young.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
FURNITURE, &c.—*continued.*			
Certain improvements in plastic knobs or mounds for bedsteads and other like purposes requiring a similar mode of attachment.	2241	12th Aug. 1870	John Lawton.
Improved apparatus for assisting invalids or bed-ridden persons in or removing from beds.	2314	23rd Aug. 1870	Isaac Negus Jakins.
Improvements in the manufacture of twilled fabrics, and in the application of such fabrics to the manufacture of various articles of wearing-apparel, and for upholstery purposes.	2446	9th Sept. 1870	Joseph James Barnett.
Improving the present system of producing a uniform action in reclining chairs and couches.	2493	15th Sept. 1870	Valentine Batchelor.
Manufacture of table ornaments known as "plateaux."	2515	19th Sept. 1870	Percival Jones.
Improved polish or renovator for polished wood, papier-mâché and other furniture or articles.	2583	28th Sept. 1870	John Hamilton.
An improved mode of coloring india-rubber and other like waterproof fabrics or materials. (*colouring furniture.*)	2761	20th Oct. 1870	Alfred Ford.
Improvements in the construction of sideboards, which improvements are also applicable to refreshment buffets and for other similar purposes.	2776	21st Oct. 1870	Adolphus Frankenberg.
Metallic bedsteads - - - - -	2902	3rd Nov. 1870	Frederick Thomas Stokes.
Improvements in sewing-machines, and in tables for sewing machines. (*adapting tables for holding flower vases.*) (*Communicated by John Niel Tarbox.*)	2953	9th Nov. 1870	Thomas James Smith.
Production of ornamental work in glass, combined or not with metals, porcelain and other like substances. - - - - - - (*legs of furniture.*)	2970	11th Nov. 1870	Stephen Tuddenham. Alexander Robert Eyre.
An improvement or improvements in castors for furniture. (*Communicated by Robert Stothert Kirkpatrick.*)	2988	15th Nov. 1870	Arthur Chamberlain.
Improved apparatus for the use of invalids - -	3014	17th Nov. 1870	Christopher Fabian Bower.
Safes or receptacles designed to serve as coal boxes, as show cases for shops and for other like purposes. (*Communicated by Benjamin Richard Deacon.*)	3016	17th Nov. 1870	George Haseltine.
Improved construction of frames for bedsteads, tables, stands, chairs, seats and other similar articles.	3033	19th Nov. 1870	Henry Tylor.
Certain improvements in castors for furniture and other purposes.	3068	23rd Nov. 1870	Richard Banton.
Constructing portable folding furniture and self-tilting and folding cask stand. (*table tops, chair seats, &c.*)	3161	2nd Dec. 1870	John Coppard.
Window, door and table fastener - -	3168	2nd Dec. 1870	Julius Augustus Faulkner. James Henry Starling.
Metallic bedsteads and cots - - -	3172	2nd Dec. 1870	Isaac Alfred Read.
An improved construction of office table - -	3276	14th Dec. 1870	William Henry Lascelles.
Bedstead for invalids - - - - - (*Communicated by George Smith.*)	3349	22nd Dec. 1870	William Spence.
An improved invalid bedstead - - -	3394	30th Dec. 1870	George Glover.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GAMES AND EXERCISES; BILLIARDS AND BAGATELLE.			
Billiard-table cushions - - - - (*Communicated by Matthew Delaney.*)	103	12th Jan. 1870	Henry Edward Newton.
An improved toy air-gun and projectile for the same (*and recreation.*) (*Communicated by Henry Josiah Griswold.*)	192	21st Jan. 1870	William Robert Lake.
Apparatus to be employed for registering the number of games played at billiards.	347	7th Feb. 1870	John Ramsbottom.
A cricketer's battery - - - - - - -	399	10th Feb. 1870	William Swain.
Playing cards - - - - - -	414	11th Feb. 1870	Robert Chanony.
An improved portable frame for playing billiards upon an ordinary table. - - - - -	418	12th Feb. 1870	James Henry Passingcomb Colson.
Billiard and bagatelle tables - - -	484	18th Feb. 1870	Edwin Chafer.
Improved methods of constructing, converting and using billiard and other tables. (*bagatelle cue, ninepins, &c.*)	576	26th Feb. 1870	Robert Jekyll Westley.
Bezique markers - - - - - -	892	26th March 1870	Alfred Dickinson. Warren William de la Rue.
Croquet mallets - - - - - -	1107	14th April 1870	Ernest de la Rue.
Improved apparatus to be employed in the performance of gymnastic exercises. (*Communicated by William Hanlon.*)	1114	16th April 1870	Henry Edward Newton.
Certain improvements in apparatus used for scoring or recording numbers. (*in billiards, games of cards, &c.*)	1129	18th April 1870	George Colleton Cooke.
Apparatus for healthily exercising the human frame.	1479	21st May 1870	Frank Milnes.
Improved apparatus to be employed in gymnastic performances.	1572	30th May 1870	William Farini.
An improvement in billiard and bagatelle cues -	1741	17th June 1870	Thomes Greenwood. Julius Fabian.
Improvements in the manufacture of artificial stone and in articles composed thereof. (*billiard and bagatelle tables.*)	1822	27th June 1870	William Bennet Adamson.
Apparatus for indicating or marking games -	1894	4th July 1870	Frederick Pulman.
Manufacture and construction of india-rubber cushions for billiard tables.	1975	13th July 1870	Charles Moseley.
Machinery or aparatus for reducing wood, metal or other hard material to fixed patterns. (*billiard cues.*) (*Communicated by Frederick Baldwin.*)	1987	14th July 1870	Giovanni Sconcia.
Articles bearing or containing letters, characters, inscriptions or announcements, especially applicable for advertising purposes. (*or for solitaire balls.*)	2025	18th July 1870	Charles Samuel.
An improved swing - - - -	2091	25th July 1870	Henry Atkinson.
Improvements in carriages for running on circular railways and in the means or methods of propelling the same.	2222	10th Aug. 1870	Abraham Waddington.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GAMES, &c.—*continued.*			
Apparatus for registering the number of players in the game called "pool" or other games.	2265	15th Aug. 1870	James Hartley.
Improved apparatus for indicating and registering pool and other games of skill, and indicating the amount of money paid by the players for the use of the table.	2587	29th Sept. 1870	John James Cousins.
An improved apparatus for gymnastic exercises on two semi-circular parallel arches with starting and safety platforms.	2683	11th Oct. 1870	Jean Boisset.
Numerical registering and indicating apparatus - (*for bezique, billiards, &c.*)	2752	19th Oct. 1870	George George.
An improved mode of colouring india-rubber and other like waterproof fabrics or materials. (*colouring croquet balls.*)	2761	20th Oct. 1870	Alfred Ford.
Machinery for cutting or shaping wood - - (*forming cricket balls.*)	3029	18th Nov. 1870	Allen Ransome.
Whist markers - - - - - -	3303	17th Dec. 1870	Henry Jones, junior. Warren William de la Rue.
GAS, GASOMETERS, HOLDERS AND RETORTS; OXYGEN.			
Apparatus for hinging, adjusting and fastening gas retort lids, covers or doors, and other lids, covers and doors.	3	1st Jan. 1870	Stephen Holman.
Purifying coal gas - - - - - -	35	5th Jan. 1870	Isham Baggs.
A new flexible valve for regulating the flow of fluids in pipes, also used in apparatus used for the manufacture of gas.	113	13th Jan. 1870	George Thorneloe.
Treatment of acid tars obtained from boghead, mineral, schist or petroleum. (*chlorhydric acid gas.*) (*Communicated by Gervais Chevrier.*)	153	18th Jan. 1870	John Henry Johnson.
Improvements in apparatus for and in the treatment of liquid fuel, and in the application thereof to prime movers. (*generating gas.*)	194	22nd Jan. 1870	Johann Maximilian Plessner.
Apparatus for generating carbonic acid gas for application to the extinction and prevention of fire. - - - - - - -	196	22nd Jan. 1870	James Paton. Peter Harris. Robert Harris.
Improvements in apparatus used in the manufacture of gas, part of which apparatus is also applicable for ventilating mines, for promoting combustion and for pumping, measuring and forcing fluids. - - - - - -	259	28th Jan. 1870	Edmund Small Cathels. David Terrace.
Improvements in generating gas from petroleum and other oleaginous substances, and in the apparatus to be employed therein. (*Communicated by Augustin Irel Ambler.*)	424	12th Feb. 1870	Alexander Prince.
Obtainment or production of oxygen gas - - (*Communicated by Paul Brocchi.*)	498	19th Feb. 1870	John Henry Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GAS, &c.—*continued.*			
Improvements in the manufacture of gas, and in obtaining residual products from such manufacture, and in apparatus to be used in such manufacture.	510	21st Feb. 1870	Frank Clarke Hills.
Apparatus for charging and discharging gas retorts and for other similar purposes.	565	25th Feb. 1870	James John Holden.
Apparatus employed to produce inflammable gas from mineral or other oils, modifications of which apparatus are also applicable to be employed in the heating of water or the generation of steam. - - - - -	593	28th Feb. 1870	Thomas Clayton. John Taylor.
Improvements in apparatus and in combined materials for generating gases for extinguishing fires in mines, vessels, buildings or other places, such apparatus being available for warming buildings or apartments.	642	4th March 1870	Thomas Atkins.
Improved machinery or apparatus and processes for the manufacture of paper and other pulp from wood and other fibrous materials. (*drawing off the gas.*)	750	15th March 1870	John Felber.
An improved sieve for gas purifiers and scrubbers -	836	21st March 1870	George Skey. Thomas Proud.
Manufacture of illuminating gas - - -	1014	6th April 1870	William Young. Peter Brash.
Centre valves for gas purifiers and other apparatus	1064	12th April 1870	Charles Clement Walker. William Thomas Walker.
An improved method of treating and utilising some of the waste products resulting from the purifying of gas in gasworks.	1099	14th April 1870	Robert John Everett.
Portable apparatus for manufacturing gas -	1144	19th April 1870	George Symes. James William Young.
An improved portable apparatus for generating illuminating gas. - - - -	1184	23rd April 1870	John Pardoe Ferris. Edward Craddock.
Apparatus or arrangements to be used in connection with retorts for the manufacture of gas -	1274	4th May 1870	William Woodward. Adam Woodward, junior.
Improvements in the manufacture of gas and coke and in the apparatus to be employed in the same manufacture.	1285	5th May 1870	Joseph Bryan Hickmott.
A new or improved mode of producing oxygen gas at the ordinary temperature of the air or at a higher temperature.	1300	6th May 1870	Edward Thomas Kirkpatrick.
Improvements in obtaining and applying heat and in furnaces employed therein, also in utilising a product resulting therefrom. (*obtaining carbonic acid gas.*)	1304	6th May 1870	Thomas Don.
Apparatus or machinery for making gas from liquid hydro-carbons for illuminating purposes. (*Communicated by Myron Hopkins Strong, Thomas Barbour and Charles Cunningham Connor.*)	1335	10th May 1870	William Robert Lake.
Retorts and retort settings - - -	1410	17th May 1870	Charles Hunt.
Apparatus for the production of gases for lighting and heating purposes. (*Communicated by Xavier Moussard.*)	1456	19th May 1870	Alexander Melville Clark.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Gas, &c.—*continued.*			
Improvements in regenerative gas furnaces and apparatus connected therewith, for the manufacture of glass, also partly applicable to regenerative gas furnaces generally. (*Partly communicated by Frederick Siemens.*)	1513	25th May 1870	Charles William Siemens.
Manufacture and treatment of coal gas for illuminating purposes.	1524	26th May 1870	David Jones.
Improvements in motive-power, and in machinery, apparatus or appliances to be used in connection therewith. (*generating gas.*)	1537	27th May 1870	William Astrop.
Construction and arrangement of vessels employed in the manufacture of nitrous oxide gas, and for other similar purposes.	1546	27th May 1870	Henry Blandy.
Improved means and apparatus for exhausting, forcing and purifying gas for heating and illuminating purposes.	1560	28th May 1870	William Cleland.
Furnaces for metallurgical purposes - - (*gas generator.*) (*Communicated by Auguste Ponsard.*)	1624	4th June 1870	John Henry Johnson.
Improvements in and apparatus for manufacturing gas for illuminating and heating from coal oils.	1640	7th June 1870	William Wilson.
Machinery or apparatus for supplying coal, cannel or other substances to gas retorts or ovens, and for withdrawing the same after distillation. -	1664	9th June 1870	James William Butler. William David Butler. James Dunbar.
Improvements in the manufacture and fusion of cast-iron and in the apparatus connected therewith. (*gas generator, using gas.*)	1712	15th June 1870	Aristide Balthazard Bérard.
Means of producing and regulating motive-power	1859	30th June 1870	John Bourne.
Manufacture or purification of gas - -	1872	1st July 1870	Thomas Gray.
Manufacture of iron salts or compounds, and in the purification of gas.	1952	9th July 1870	William Marriott.
Process of and apparatus for carburetting gases or atmospheric air, so as to render the same applicable for lighting, heating or producing motive-power. (*Communicated by Emile Charles Maillet.*)	1967	12th July 1870	Bristow Hunt.
Apparatus for the manufacture of gas - - (*Communicated by Edwin Dodd McCracken, Henry Jotham Newton, Henry Burnham Kirkland and Joseph Roderick Husson.*)	2083	23rd July 1870	William Edward Newton.
Improvements in generating gas from petroleum and other oleaginous substances, and in the apparatus to be employed therein. (*Communicated by Augustin Irel Ambler.*)	2248	12th Aug. 1870	Alexander Prince.
Improvements in the manufacture of oil, and in the machinery or apparatus to be employed therein. (*for gas making.*)	2320	23rd Aug. 1870	James Lloyd.
Improvements in apparatus for producing inflammable gas from mineral and other oils, parts of which are applicable for heating purposes -	2354	27th Aug. 1870	Thomas Clayton. William Henry Bailey.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GAS, &c.—*continued.*			
Improvements in apparatus for economizing the waste heat and gases from furnaces, and in means for generating, collecting and purifying gases, such gases being applicable to various useful purposes.	2377	31st Aug. 1870	Thomas Atkins.
Portable apparatus for manufacturing gas - -	2591	29th Sept. 1870	George Symes.
Process of revivifying the materials used for the purification of gas. - - -	2664	7th Oct. 1870	Andrew McNeil. William Wheaton.
Improvements in the manufacture of sulphuric acid and in apparatus connected therewith. (*using spent oxide of iron.*)	2823	27th Oct. 1870	Peter Spence.
Purification of gas - - - -	2974	12th Nov. 1870	Augustus George Vernon Harcourt.
For carbonic acid gas, *see* "AËRATING." For nitrous acid gas, *see* "ACIDS."			
GAS AND OTHER BURNERS AND REGULATORS; GAS FITTINGS; LIGHTING GAS; PREVENTING ESCAPE OF GAS.			
Improvements in dials for gas regulators and in dials in general, also in bezils or rings for dial faces.	61	7th Jan. 1870	John Carnaby.
Furnaces - - - - - (*construction of smoke and gas burners.*)	74	10th Jan. 1870	Walter Watson Hughes.
Improved apparatus for preventing the downward draught in chimneys. (*and apparatus for burning gas.*)	125	15th Jan. 1870	Murray Anderson.
A novel arrangement and construction of gas burner. (*Communicated by Augustus Hubbell.*)	143	18th Jan. 1870	Theodore Byron Hubbell.
Gas and other pressure regulators - - (*Communicated by Henri Giroud.*)	315	3rd Feb. 1870	John Henry Johnson.
Gas burners - - - - -	340	5th Feb. 1870	Heinrich Witthöft.
Apparatus for cooking, heating and lighting by gas	463	17th Feb. 1870	Sigismund Leoni.
Gas pressure governors - - -	504	21st Feb. 1870	William Edwin Heath.
Improved apparatus for using the lime light for theatrical representations and other purposes. (*regulating.*)	643	4th March 1870	Edward John Cowling Welch.
Improvements in vulcanizers or apparatus employed in vulcanizing india-rubber, which improvements may also be applied to the regulation of the flow of gas for various purposes.	726	11th March 1870	Charles Jackson.
Construction of cocks for gas or for beer or wine or other liquids or fluids.	1133	19th April 1870	Frederick Tallis.
Improvements in the manufacture and in the securing of tubes, taps and plugs, in boilers and other vessels, also in certain modes of regulating and stopping the flow of liquids, gases or air into or from such vessels.	1180	22nd April 1870	Charles Lungley.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Gas, &c.—*continued.*			
An improved apparatus for regulating the pressure of gas in gas burners.	1240	30th April 1870	Victor Bablon.
Apparatus for lighting and heating purposes -	1467	20th May 1870	Albert Marcus Silber. Frederick White.
Steam and other valves - - -	1477	21st May 1870	Henry Hind. George Wells.
Mode of supplying lamps or lanterns with atmospheric air for supporting their illuminating flames. (*constructing the burner.*) (*Communicated by John Henry Irwin.*)	1485	23rd May 1870	Martin Benson.
Construction of gas stoves - - - (*circular burner.*)	1514	25th May 1870	George Thomas.
Certain improvements in vestibule lamps -	1625	4th June 1870	Edmund Ratcliff.
Improvements in producing light from heavy hydrocarbons and in apparatus for that purpose. (*Communicated by Rufus Spaulding Merrill.*)	1660	8th June 1870	John Henry Johnson.
Gas-burners - - - - (*Communicated by Frederick Charles Krause.*)	1733	17th June 1870	Charles Joseph.
Machinery for forcing or exhausting air or aëriform fluids.	1792	23rd June 1870	Edward Finch.
Lamps - - - - -	1906	6th July 1870	John Young.
Apparatus for economising and purifying gas -	2024	18th July 1870	William Sleight Bentley. William Isham.
Gas regulators - - - -	2071	22nd July 1870	Thomas Higgs. John Elliott.
Burners for burning gas and volatile combustible liquids.	2176	4th Aug. 1870	Thomas Barling.
Means or apparatus for supplying mines and other places with lighting gas. - - -	2217	10th Aug. 1870	George Huntriss. John Swinburn. James Wilson.
Construction of water cocks and gas cocks -	2278	17th Aug. 1870	William Harvey.
Apparatus for lighting and heating purposes -	2331	24th Aug. 1870	Albert Marcius Silber.
Mechanical telegraphs and liquid to be used therewith, which fluid is also applicable as a power transmitter for other purposes, for the making of liquid joints and other purposes where it is desirable to use a liquid that does not readily congeal or evaporate. - - - (*for gas pendent joints.*)	2384	1st Sept. 1870	Charles Henry Chadburn. William Chadburn.
Improvements in gas burners and in the construction of the same.	2426	7th Sept. 1870	Cornelius William Morley.
Vapor or gas burners - - - (*Communicated by John Charles Love.*)	2521	19th Sept. 1870	Alexander Horace Brandon.
Improved means or apparatus for stopping or regulating the flow of fluids, gases or steam.	2556	7th Oct. 1870	Martyn John Roberts.
Gas stoves for heating and warming rooms and for other like purposes.	2730	17th Oct. 1870	John Stalvies.
Improvements in applying heat to steam boilers and in apparatus therefor. (*construction of burners.*)	2748	19th Oct. 1870	Brierley Denham Healey.
Means or apparatus for producing the more complete combustion of gas, paraffin and other hydrocarbon oils. (*Communicated by Henry Harrison Doty.*)	2865	31st Oct. 1870	Alexander Horace Brandon.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GAS, &c.—*continued.*			
Apparatus for lighting	2872	1st Nov. 1870	Albert Marcius Silber. Frederick White.
Lamps for the roofs of railway carriages and other purposes. (*of burners.*)	2982	14th Nov. 1870	William Thomas Tongue.
Gas regulating apparatus (*Communicated by Myron Hopkins Strong, Thomas Barbour, Charles Cunningham Connor and Robert Barbour.*)	3062	23rd Nov. 1870	William Robert Lake.
Four way valve apparatus (*gas valves.*)	3179	3rd Dec. 1870	John Robb.
Mode of and apparatus for igniting gas (*Communicated by Wilhelm Klinkerfues.*)	3228	8th Dec. 1870	William Lloyd Wise.
Cocks and valves (*for the passage of gas.*)	3304	17th Dec. 1870	Sydney Smith.
For gas pipes, *see* "PIPES."			
GAUGES, SAFETY PLUGS, WATER LEVEL INDICATORS.			
Instruments for measuring fluid or other pressure or weight.	20	3rd Jan. 1870	Frederick Foster.
An improved self-gauging and registering indicator for ascertaining the hourly, daily or periodical consumption of liquids of any kind.	68	8th Jan. 1870	Henry William Lowden.
Means and apparatus for gauging or regulating the flow of water or other liquids. (*see* "METERS.")	80	11th Jan. 1870	Edme Augustin Chameroy.
Machinery for excavating coal, stone and other minerals, and for compressing air. (*pressure and weight gauge.*)	571	26th Feb. 1870	Samuel Firth. Frederick Hurd.
Indicators for steam-boilers	585	28th Feb. 1870	John Wakefield. Joseph Kendall.
Apparatus for giving alarm when the water in steam-boilers is below the proper level.	595	1st March 1870	John Parkinson.
Boiler fittings (*pressure gauges.*)	634	3rd March 1870	William Henry Bailey.
Improved apparatus for indicating a deficiency of water in steam-boilers and for regulating the supply of water thereto. (*Communicated by Rufus Nutting Pratt and Robert Berryman and Francis A. Pratt and Samuel Coit.*)	744	14th March 1870	William Robert Lake.
Improvements in maintaining, controlling and registering the pressure in hydraulic presses and in apparatus connected therewith.	785	16th March 1870	Francis Virtue.
Apparatus employed in the administration of nitrous oxide gas (or other gas that may be inhaled) for indicating the quantity at each and every inhalation.	860	24th March 1870	Sunderland Mawson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GAUGES, &c.—*continued.*			
An improved apparatus for indicating the water level in steam boilers.	1030	7th April 1870	Emile Daniel.
Water-feeding apparatus for boilers - -	1103	14th April 1870	Paul Narcisse Joseph Macabies.
Safety apparatus for steam-boilers - - (*indicating water level.*)	1125	18th April 1870	Alexander Morton Strathern. David Graeme Morrison.
Self-registering water or liquid gauges - -	1197	25th April 1870	George Jordan Firmin.
Manufacture of ball floats - - - (*for water gauges.*) (*Partly communicated by L. L. Lee.*)	1353	12th May 1870	Lemuel Willis Weeks.
Safety attachments for steam generators - (*test pipe.*) (*Communicated by Hiram Kimball.*)	1549	27th May 1870	Benjamin Joseph Barnard Mills.
Machinery or apparatus for testing strain or pressure applied to solid bodies, and for other like purposes. (*metallic gauges of high pressure.*) (*Communicated by Jules Auguste Deygoffe.*	1649	7th June 1870	William Robert Lake.
Steam-pressure gauges - - - - -	2114	28th July 1870	Edward Joseph Curtin.
An improved recording pressure gauge and alarm apparatus. (*Communicated by Maimont B. Edson.*)	2411	3rd Sept. 1870	George Haseltine.
An improved water gauge - - -	2506	17th Sept. 1870	Edward Kidd. George Bourne.
Water gauges for steam-boilers - - - (*Communicated by L. L. Lee.*)	2571	26th Sept. 1870	Lemuel Willis Weeks.
Safes, strong rooms and apparatus for the protection of valuable property. - - - (*pressure gauge.*)	2654	6th Oct. 1870	Samuel Chatwood. Thomas William Tobin.
"Low-water alarms" for steam generators or water heaters.	2821	27th Oct. 1870	Robert Lees.
Improvements in steam generators and in apparatus in connection therewith. - - (*height of water indicator.*)	3025	18th Nov. 1870	Thomas Mills. William Bryce.
Means or apparatus for preventing steam-boiler explosions.	3043	21st Nov. 1870	Edward Langlet.
Improvements in the manufacture of iron and steel and castings of the same, and in apparatus employed therefor. (*floating metallic indicator.*) (*Communicated by John Ware Middleton.*)	3087	24th Nov. 1870	George Haseltine.
GLASS; APPLICATIONS OF GLASS.			
An improved means or method of exhibiting names, photographs, views, designs or sketches in monuments, door or other knobs, boxes, walking sticks, umbrellas and various other articles. -	112	13th Jan. 1870	Joseph Wright. Joseph Cryer. Edwin Rhodes.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GLASS, &c.—*continued.*			
Construction of horticultural structures, cases or enclosed spaces for use in growing seeds, plants, fruit trees and other vegetable productions. (*application of sheets of glass.*)	419	12th Feb. 1870	Benjamin Looker.
Glass and other furnaces - - -	460	16th Feb. 1870	John Dawson. Nathaniel Grace Lambert.
Producing engravings on glass, metals, wood and other substances.	1102	14th April 1870	Amédée Auguste Wilbaux.
Apparatus or means for manipulating gold leaf for ornamenting and lettering. (*lettering on glass.*)	1138	19th April 1870	Ezra Hoyle.
Improvements in obtaining and applying heat and in furnaces employed therein, also in utilizing a product resulting therefrom. (*heating glass furnaces.*)	1304	6th May 1870	Thomas Don.
Glazed structures for horticultural purposes -	1349	11th May 1870	William Edgecumbe Rendle.
Manufacture and ornamentation of articles of glass	1420	17th May 1870	Thomas George Webb.
Improvements in regenerative gas furnaces and apparatus connected therewith for the manufacture of glass, also partly applicable to regenerative gas furnaces generally. (*Partly communicated by Frederick Siemens.*)	1513	25th May 1870	Charles William Siemens.
Apparatus for grinding or polishing plate glass or slabs of slate, stone, marble or other substances.	1545	27th May 1870	Percy Graham Buchanan Westmacott.
Treatment of slag and other vitreous material - (*from glass works.*) (*Communicated by Henry Baldwin, junior.*)	1644	7th June 1870	George Tomlinson Bousfield.
Spectacles, eye-glasses and like articles - - (*achromatic glasses.*) (*Communicated by Eloi Eugene Narcisse Derogy.*)	1694	13th June 1870	Michael Henry.
Construction of roofs and sides of houses and other structures.	1718	15th June 1870	William Jeffrey Hopkins.
A new or improved manufacture of plates of glass -	1773	22nd June 1870	Samuel Neville.
Construction of boxes or cases for containing eggs, glass, crockery or other articles requiring to be packed separately. (*Communicated by James McCree.*)	1786	23rd June 1870	William Spence.
An improved process of drilling and cutting plane surfaces in the manufacture of crystal glass or metal ware, and an improved lathe for this purpose. (*Communicated by Georges Blau.*)	1819	27th June 1870	William Edward Gedge.
Manufacture of frames for photographs and other similar objects of art. (*in glass.*)	1842	28th June 1870	William Joshua Clarke.
Improvements in the construction and arrangement of horticultural and other buildings or erections or structures, and in the means and appliances for heating the same. (*glazing.*)	1870	1st July 1870	William Port Ayres.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GLASS, &c.—*continued.*			
Manufacture of pots or crucibles used in glass furnaces. (*Communicated by Hugo Stimpfl and Johann Stenger.*)	1926	7th July 1870	Carl Hoste.
Machinery or apparatus for washing plates, dishes, crockery and glass ware. (*Communicated by J. L. Simonds.*)	1977	13th July 1870	William James Schlesinger.
Cutting, boring, grinding and pulverizing stone and other hard substances. (*cutting and ornamenting glass.*) (*Communicated by Benjamin Chew Tilghman.*)	2147	1st Aug. 1870	Alfred Vincent Newton.
Improvements in the manufacture of sheet glass and in apparatus connected therewith.	2201	8th Aug. 1870	William Windle Pilkington.
Manufacture of glass - - - - -	2284	18th Aug. 1870	William Henry Balmain.
An improved method of printing upon glass -	2291	19th Aug. 1870	William George Webb.
Construction of illuminating and ventilating roofs and gratings or plates, parts of which are applicable to ordinary footways and carriage ways. (*forming ridges on glass plates.*) (*Communicated by Theodore Hyatt.*)	2755	20th Oct. 1870	John Henry Johnson.
Manufacture of the cutting tools or laps used by glass cutters, lapidaries and other similar handicraftsmen. - - - - - -	2795	24th Oct. 1870	John William Hoffman. Henry Eustace Fearn.
Manufacture of machines for mincing and cutting animal and vegetable substances. - -	2807	25th Oct. 1870	Frederick William Follows. John Bate.
Cutting, boring, grinding and pulverizing stone and other hard substances. (*glass.*) (*Communicated by Benjamin Chew Tilghman.*)	2900	3rd Nov. 1870	Alfred Vincent Newton.
Manufacture of street and carriage indicators -	2955	10th Nov. 1870	William Higgins, junr.
Apparatus for the manufacture of articles of pressed glass.	2960	10th Nov. 1870	Thomas George Webb.
Construction of crucibles or pots used in the manufacture of glass and other materials.	2966	11th Nov. 1870	Edward Bolton.
Production of ornamental work in glass combined or not with metals, porcelain and other like substances. - - - - - -	2970	11th Nov. 1870	Stephen Tuddenham. Alexander Robert Eyre.
Apparatus or machinery employed in the manufacture of sheet glass and other objects made of glass.	3101	26th Nov. 1870	Samuel Bowen.
Improvements in the manufacture of corrugated and embossed glass, and in the application of the same to the purposes of illumination. (*Communicated by Theodore Hyatt.*)	3112	28th Nov. 1870	John Henry Johnson.
Furnaces and apparatus to be used in the manufacture of glass. - - - - -	3166	2nd Dec. 1870	Samuel Bishop. Charles Bishop.
An improved mode of opening out sheet glass cylinders.	3382	28th Dec. 1870	William Windle Pikington.

See also "BOTTLES."

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GLOVES.			
Manufacture or production of gloves - -	333	5th Feb. 1870	George Holmes. Joseph Winterton.
Fastenings for gloves and other articles - -	628	3rd March 1870	James Wheeler.
An improved spring fastening for securing purses, pocket books, cigar cases and similar articles, and for other like purposes. (*applicable to gloves.*) (*Communicated by Mathurin Brouard.*)	1244	30th April 1870	William Robert Lake.
Manufacture or production of gaiters, cuffs, mitts or other similar articles.	1293	5th May 1870	William Thornton.
Fastenings applicable to purses and such like articles (*gloves.*) (*Communicated by Paul Sormany.*)	1450	19th May 1870	Joseph Schloss.
Improved machinery or apparatus for tawing or dressing skins. (*for gloves.*) (*Communicated by Joseph Berendorf.*)	2073	22nd July 1870	William Edward Newton.
Improved manufacture of trimmings, edgings, ruchings, plaiting and other similar goods. (*for gloves.*)	2300	20th Aug. 1870	Hesketh Hughes.
The preservation of gloves from the injuries accruing to them from tropical heat, and for the partial restoration of their colour when faded by wear and exposure.	2302	20th Aug. 1870	Frederic Sydenham Clarke.
An improved fastening for garments and other articles or purposes. (*for gloves.*) (*Communicated by Joseph Edward Dallon.*)	2477	14th Sept. 1870	William Edward Newton.
Improved means of and apparatus for securing the corners and other parts of millinery and other boxes and reels. (*glove boxes.*)	3379	27th Dec. 1870	Hesketh Hughes.
GLYCERINE.			
An improved mode or process for obtaining glycerine from soap-makers spent lyes. (*Communicated by Benjamin Talbot Babbitt.*)	1783	22nd June 1870	William Edward Newton.
Mechanical telegraphs and liquid to be used therewith, which fluid is also applicable as a power transmitter for other purposes, for the making of liquid joints and other purposes where it is desirable to use a liquid that does not readily congeal or evaporate. - - - (*use of glycerine.*)	2384	1st Sept. 1870	Charles Henry Chadburn. William Chadburn.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GOVERNORS AND INDICATORS OF SPEED AND POWER FOR STATIONARY ENGINES AND MACHINERY; STARTING, STOPPING AND REVERSING APPARATUS; MACHINERY-BREAKS.			
Improvements in the spinning and manufacture of stick and roll tobacco and in the machinery therefor, parts of which are applicable to the spinning of other fibrous materials. (*use of friction break.*)	44	5th Jan. 1870	William Wharton.
Apparatus for reversing marine and other large steam-engines.	51	6th Jan. 1870	James John Miller, junior.
Means or apparatus for measuring and indicating the distances travelled by vehicles. (*throwing in and out of gear.*)	82	11th Jan. 1870	Octave Vivier.
Governors for regulating the speed of prime movers (*Communicated by Edward Buss and Wilhelm Albert Buss.*)	161	19th Jan. 1870	John Garrett Tongue.
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion. (*cable brake.*)	175	20th Jan. 1870	James Maze Kilner.
Chaff cutters - - - - - (*stopping or reversing the feed rollers.*)	189	21st Jan. 1870	Frederick Charles Southwell.
Knitting-machines - - - - (*stop.*)	220	25th Jan. 1870	George Edward Harding. Peter Wright.
An improved windmill, which, when divested of a portion of its regulating parts, can also be used as a water-wheel or as a ship's propeller. (*and governor.*)	281	31st Jan. 1870	Charles Mahler.
Motive-power engines and steam generators to be used therewith, suitable for domestic purposes. (*speed regulator or governing break.*) (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johnson.
Improved means or apparatus for controlling and guiding the movements of torpedo boats, rams and other similar vessels. (*placing machinery in and out of gear by electricity.*) (*Communicated by John Archibald Ballard.*)	382	9th Feb. 1870	Thomas James Smith.
Machinery for preparing, spinning, twisting and doubling cotton and other fibrous materials. - (*regulating drag of bobbin.*)	494	19th Feb. 1870	Robert Lakin. John Bayley.
Machinery for excavating coal, stone and other minerals, and for compressing air. - - (*compressed air as governor.*)	571	26th Feb. 1870	Samuel Firth. Frederick Hurd.
Governors for steam and other engines - -	582	26th Feb. 1870	William Clark.
A new or improved motive-power engine - (*regulating power transmitted.*)	629	3rd March 1870	John Stuart Johnstone.
Looms for weaving - - - - (*reversing motion.*)	632	3rd March 1870	John Clegg.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GOVERNORS, &c.—*continued.*			
Improvements in the mounting, working and pointing of guns, and in the construction of the carriages upon which they are mounted. (*construction of break.*)	647	4th March 1870	Robert Anthony Edward Scott.
Looms for weaving - - - - (*reversing the motions.*)	686	8th March 1870	James Lee Norton.
Direct-acting steam-engine indicators - -	718	11th March 1870	John Addy Hopkinson. Joseph Hopkinson.
Certain new and useful improvements in machines for setting types. (*stopping and starting.*) (*Communicated by John Ten Eyck Slingerland.*)	752	11th March 1870	Henri Adrien Bonneville.
Apparatus for governing or regulating the speed of motive-power engines and for indicating the power of the same. (*Communicated by Jacques Théophile Gautreau.*)	762	15th March 1870	John Henry Johnson.
Gun carriages and their slides - - - (*check levers or breaks.*) (*Communicated by John Wall Wilson.*)	770	15th March 1870	William Edward Newton.
Mules for spinning and doubling - - - (*break pulley.*)	771	16th March 1870	Robert Lakin. William Henry Rhodes. John Wain. William Greasley.
Machinery or apparatus to be employed for preparing cotton and other fibrous substances for spinning. - - - - - (*stopping and starting the bobbins.*)	915	29th March 1870	Alfred Wilcock. Richard Robinson. Frederick Wilcock.
Looms for weaving - - - (*stopping.*)	936	31st March 1870	Mark Knowles. James Conlong. William Frankland.
Improvements in steering gear, and in machinery for starting, stopping and reversing heavy steam-engines and turrets, and for discharging cargo.	1018	7th April 1870	Andrew Betts Brown.
An improvement in typographic, lithographic and zincographic printing machines. - - (*regulating speed of cylinder.*)	1025	7th April 1870	Charles Henry Gardner. George Howard Carey.
Looms - - - - - - - (*break motion, reversing motion.*) (*Communicated by George Crompton.*)	1048	9th April 1870	Alexander Horace Brandon.
Jacquard machinery - - - - (*stopping one cylinder and starting another.*)	1049	9th April 1870	Aaron Mosley.
Certain improvements in steam and other elastic fluid engines.	1063	12th April 1870	Robert Wilson.
Construction of reaping and mowing machines - (*throwing the pinions in and out of gear.*)	1161	21st April 1870	William Arundell Oatey.
Construction of oscillating cylinder engines -	1216	27th April 1870	Henry Edward Curtis.
Apparatus for starting treadle motions, applicable to sewing-machines and other purposes. (*Communicated by Orwell Harrison Needham and Charles Newell Brainerd.*)	1226	28th April 1870	Alfred Vincent Newton.
Apparatus for saving life and property from fire, applicable also for lowering weights for other purposes. (*break.*)	1259	2nd May 1870	Edwin Robert Wethered.
Reversing gear for engines - - -	1277	4th May 1870	Washington Champion Rawlins. Arthur Knowles.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GOVERNORS, &c.—*continued.*			
Machinery for shaping wood and other materials - (*arrangement of disconnecting gear.*)	1395	16th May 1870	Henry Augustus Biertumpfel. William James Loveday.
Machines for and the manufacture of knitted goods (*stopping the machines.*)	1428	18th May 1870	David McColley Weston.
Looms for weaving - - - - (*arresting and starting.*) (*Communicated by Erastus Brigham Bigelow.*)	1437	18th May 1870	George Tomlinson Bousfield.
Motive-power engines - - - (*governors.*)	1504	24th May 1870	John Yule.
Tape dressing or sizing machines - - -	1526	26th May 1870	John Bullough.
Looms for weaving - - - - (*stopping device.*) (*Communicated by Charles Piat.*)	1532	26th May 1870	William Edward Newton.
Improvements in printing and in the machinery or apparatus employed therefor. (*automatic stopping of the machinery.*)	1581	31st May 1870	Percy David Hedderwick.
A new or improved electro-magnetic apparatus for moving panoramas, advertisements or other things required to be exhibited. (*reversing the motion of the drums.*) (*Communicated by Louis Finger.*)	1584	31st May 1870	Bristow Hunt.
Carding and spinning machines - - - (*brake or stop mechanism.*) (*Communicated by John Goulding.*)	1601	2nd June 1870	Alexander Horace Brandon.
Improvements in or applicable to milling or fulling and washing machines. (*speedy stoppage.*)	1632	6th June 1870	Alfred Johnson.
An improved arrangement of reversing and expansion gear for steam-engines. - -	1646	7th June 1870	Thomes Aveling. Henry Rawlinson.
An improved stop motion applicable to machinery or apparatus employed in bleaching, scouring, dyeing, sizing and dressing warps, yarns and fabrics, also in carding and combing wool or other fibrous substances. - - -	1654	8th June 1870	William Dewhirst. Thomas Dewhirst. Joseph Dewhirst.
Machinery for cultivating land by steam or other power. - - - - (*turning ploughs, harrows, drills, &c.*)	1667	9th June 1870	William Fisken. Thomas Robert Hay Fisken.
Apparatus for governing and controlling steam-engines. - - - - -	1671	9th June 1870	Octavius Chamberlin Stone. William Pridgeon.
Reaping and mowing machines - - - (*placing in and out of gear.*)	1765	21st June 1870	Adam Carlisle Bamlett.
An internal spring coupling and brake for transmitting, stopping or regulating motion. -	1777	22nd June 1870	Léandre Mégy. Joseph de Echeverria. Felix Bazan.
Means of producing and regulating motive-power	1859	30th June 1870	John Bourne.
Looms for weaving - - - - (*stopping lever.*)	1921	7th July 1870	Isaac Whitesmith.
Machinery for punching metal - - - (*stopping the punches.*)	1928	7th July 1870	Charles de Bergue.
An improved hot-air engine - - - - (*construction of governor.*)	1945	9th July 1870	Thomas Tertius Chellingworth.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GOVERNORS, &c.—*continued.*			
Counting registers applicable to counting the revolutions of shafts in various kinds of machinery, steam and other engine indicators, for registering stroke or travel indicators, for gas or water meters, clocks, adding machines and registering devices of different kinds or for various purposes. (*Communicated by William Henry McNary.*)	1988	14th July 1870	William Edward Newton.
Improvements in the manufacture of ornamental and other twisted metal work, and in the machinery, apparatus or means employed therein. (*adjustable break.*)	2016	16th July 1870	Stephen Tuddenham.
Governors for marine engines - - -	2070	22nd July 1870	Thomas Burrell.
Certain improvements in machinery for preparing cotton and other fibrous substances. - - (*stop motions.*)	2230	11th Aug. 1870	Samuel Brooks. John Standish.
Improvements in motive-power engines, which improvements are also in part applicable as brakes and dynamometers. (*breaks.*)	2285	18th Aug. 1870	Thomas Ivory.
Certain improvements in sewing-machines - - (*stopping.*)	2301	20th Aug. 1870	Arthur Isaac Maxfield.
Printing machinery - - - - - (*stopping, holding and starting the impression cylinder.*) (*Communicated by Richard March Hoe.*)	2330	24th Aug. 1870	William Edward Newton.
Weighing-machines involving means for counting, registering, printing, adding and other operations connected with weighing scales. (*stopping the machinery.*)	2456	10th Sept. 1870	Henry Fairbanks.
Cut-off valve gear for steam-engines - - (*vibrating governor.*) (*Communicated by Daniel Frank Mosman.*)	2528	20th Sept. 1870	David Hunter Brandon.
Mules for spinning - - - - - (*removing band from fast to loose pulley.*)	2549	23rd Sept. 1870	Thomas Rawsthorne.
Improved means or apparatus for putting driving straps upon drums or pullies when in motion.	2601	30th Sept. 1870	John Proven.
Working of galvanic batteries - - - (*switch to throw in or out of circuit.*) (*Communicated by Edwin Dodd McCracken, Henry Jotham Newton, Henry Burnham Kirkland and Joseph Roderick Husson.*)	2642	5th Oct. 1870	Alfred Vincent Newton.
Looms for weaving - - - - (*break.*)	2703	13th Oct. 1870	William Greaves. George Greenwood.
Reaping and mowing machines - - - (*throwing out of gear.*)	2801	24th Oct. 1870	William James Burgess. Charles Thomas Burgess.
Self-acting mules - - - - (*stopping spindles.*)	2968	11th Nov. 1870	Thomas Hart.
Indicators for steam-engines - - -	2994	16th Nov. 1870	Thomas Williamson.
Apparatus for raising and lowering weights and for reducing speed.	3009	17th Nov. 1870	Jonathan Pickering.
Machinery for cutting or shaping wood - - (*self-acting stop for cross cutting machines.*)	3029	18th Nov. 1870	Allen Ransome.
Governors for steam or other motive-power engines	3053	22nd Nov. 1870	William Newzam Nicholson. Edward Lawrence.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GOVERNORS, &c.—*continued.*			
Improvements in brushes and in machinery for manufacturing the same. (*stopping and starting the machine.*) (*Communicated by Oscar Densmore Woodbury, Edwin Channing Woodbury, John Jay Sibley and Hiram Cornelius Covert.*)	3065	23rd Nov. 1870	Alfred Vincent Newton.
Improvements in machinery for winding cops and in shuttles for weaving cops. (*stopping the spindles.*)	3185	3rd Dec. 1870	John Combe.
Portable and other steam-engines - - (*connecting valve with governor.*)	3186	3rd Dec. 1870	Edward Rush Turner.
Certain improvements in self-stopping beam warping machines.	3270	14th Dec. 1870	William Henry Hacking.
Improvements in machinery for stamping and breaking ores and separating the same from substances with which they may be combined, parts of which improvements are also applicable in the construction of steam-hammers and steam-engines. - - - - - (*construction of governor.*)	3357	23rd Dec. 1870	James Willoughby. William Willoughby. Joseph Willoughby. Samuel Willoughby.
GRINDING AND CRUSHING CORN, GRAIN, SEEDS, &c.; DRESSING FLOUR; MILLSTONES; DECORTICATING GRAIN.			
Improved machinery for manufacturing semolina and flour.	229	25th Jan. 1870	Gustav Adolph Buchholz.
Mill bills - - - - - - (*for dressing millstones.*)	276	31st Jan. 1870	Thomas Lee. William Lee. Edward Lee.
Motive-power engines and steam generators to be used therewith, suitable for domestic purposes. (*driving grinding mills.*) (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johnson.
Machinery for cleaning, scouring and decorticating wheat and other kind of grain, and also for hulling, cleaning and polishing rice.	371	9th Feb. 1870	Augustus Bryant Childs.
An improved crushing and disintegrating machine or mill. - - - - (*producing flour from grain.*)	377	9th Feb. 1870	Ralph Peacock. Edward Wilson.
Improved machinery for bolting or sifting flour or meal, and separating the heavier from the lighter particles. (*Communicated by Louis Theodore Hippolyte Loron.*)	416	11th Feb. 1870	William Edward Newton.
Apparatus or machinery to be employed for facing, grooving or otherwise preparing blocks of stone, portions thereof being also applicable for other purposes. (*dressing millstones.*)	429	14th Feb. 1870	Thomas Taylor Lingard.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GRINDING CORN, &c.—*continued.*			
Machinery for hulling or treating grain -	637	4th March 1870	Robert Young.
Machinery for dressing or sifting ground wheat or other grain. (*Communicated by Messieurs Nagel and Kæmp.*)	649	5th March 1870	Julius Allmann.
Millstone picks - - - - - -	698	9th March 1870	William Oldfield Wilson.
Direct-acting power hammers and machinery for crushing and pulverising. - - - (*crushing grain, seed, &c.*)	715	10th March 1870	Samuel Chatwood. John Sturgeon.
A new or improved application of machinery for treating grain in order to obtain certain products therefrom.	736	12th March 1870	John Polson.
Rotary corn screens for dressing and separating grain. - - - - - - -	776	16th March 1870	William Rainforth, sen. William Rainforth, jun.
Mill bills or chisels and picks for dressing millstones, marble or other stones.	858	23rd March 1870	James Charles Cushion.
Improved machinery for manufacturing semolina and flour.	867	24th March 1870	Gustav Adolph Buchholz.
Improved means and apparatus for regulating the driving of millstones. (*Communicated by William Charlton Harrison.*)	891	26th March 1870	Thomas James Smith.
An improved millstone dress - - - (*Communicated by John Fairclough.*)	1042	8th April 1870	John Fairclough.
Apparatus for dressing and furrowing millstones -	1120	16th April 1870	James Lee Norton.
Machinery for treating cotton seeds - - (*for crushing.*)	1121	18th April 1870	William Henry Delamare.
Machinery for hulling cotton seeds and separating their kernels from the hulls and fibres. (*huller may be used in grinding grain.*)	1175	22nd April 1870	Henry Shaw.
Improvements in mills for grinding cattle food and other materials and in apparatus connected therewith. - - - - - -	1189	23rd April 1870	Walkden Thompson. Thomas Stather.
Treatment of maize - - - - (*Communicated by H. Cavayé and Company.*)	1288	5th May 1870	John Henry Johnson.
An improved machine for decorticating fruits and vegetables.	1610	3rd June 1870	John Frank Rogers.
Improvements in treating farinaceous substances and in apparatus therefor.	1681	11th June 1870	William Polson.
Improved apparatus for dressing stones to be employed for decorticating grain or seeds. (*Communicated by Charles Golay.*)	1873	2nd July 1870	John Henry Johnson.
Dressing or cutting millstones - -	1884	4th July 1870	Edward Copeland Stiles. John Fenn Elsdon.
Improvements in machinery and arrangements for cleaning and reducing wheat, maize, beans, peas and other seeds into flour or semolina, part of which improvements are applicable to machinery for pulverising or reducing other substances.	1895	5th July 1870	Thomas Carr.
Improvements on and application of certain machinery to the process of manufacturing flour from wheat.	2013	16th July 1870	Joel Spiller.
An improved wind engine or apparatus for obtaining and applying motive power. - - (*for grinding corn.*)	2033	19th July 1870	Charles Horton Plowright. William Plowright.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GRINDING CORN, &c.—*continued.*			
An improved manufacture of wheat flour - -	2149	2nd Aug. 1870	Thomas Carr.
Apparatus for the treatment of wheat for the manufacture of flour.	2199	8th Aug. 1870	Richard Allen, the younger.
An improved machine for reducing "isinglass" or brewers' finings. - - - -	2245	12th Aug. 1870	James Gale. Henry Ormston.
Improvements in treating grain preparatory to its conversion into flour, and in the machinery or apparatus employed therein. (*steaming and cleaning.*)	2260	13th Aug. 1870	Horace Hayes.
Certain improvements in apparatus or mechanism known as the "silk bolter," employed for dressing flour, and which may also be employed for dressing other ground or pulverized material. - - - -	2407	3rd Sept. 1870	Stephen Dawson. Edward Davies.
An improved screen-wire for dressing wheat and other grain, which web is also applicable to dressing sieves generally, and for the floors of malt and other drying kilns.	2429	8th Sept. 1870	William Silcock.
Machinery for breaking cotton seed to facilitate the separation of the kernel from the husk. -	2532	21st Sept. 1870	Thomas Rose. Robert Emerson Gibson.
Machinery and apparatus for breaking nuts and separating the husks and shells from the kernels.	2741	18th Oct. 1870	William Mather.
An improved machine for hulling, cleaning, polishing and grinding rice, wheat and other grain or seed, and for similarly treating various other substances.	3100	25th Nov. 1870	Samuel Gardiner.
Improvements in separating seeds and ground or pulverised substances, and in the apparatus or means employed therefor.	3258	13th Dec. 1870	William Walker Gibson.
An improved mill or machine for grinding corn or grain or other substances of a like nature.	3238	9th Dec. 1870	John Fletcher.
Machinery or apparatus for breaking, crushing and pulverizing cement and other substances. (*grain.*)	3295	16th Dec. 1870	Julius Frederick Moore Pollock.
GRINDING AND CRUSHING MINERALS, CLAY, FIBROUS PLANTS, &c.; BREAKING STONE.			
Improvements in ornamenting woven and felted fabrics and in apparatus employed therein. - (*grinding fibres for adhering.*)	210	22nd Jan. 1870	John William Eyres. John Longbottom.
An improved crushing and disintegrating machine or mill. - - - - (*grinding bark, ores, coal, &c.*)	377	9th Feb. 1870	Ralph Peacock. Edward Wilson.
Machinery or apparatus for breaking or reducing stones, and for crushing quarts or schist, bones, emery, ores and all mineral and other substances. - - - -	497	19th Feb. 1870	Ferdinand Oliver Camroux. George Oliver.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GRINDING MINERALS, &c.—*continued.*			
Direct-acting power hammers and machinery for crushing and pulverising. (*crushing quartz.*)	715	10th March 1870	Samuel Chatwood. John Sturgeon.
Certain improvements in machinery or appliances for reducing bones, hoofs, horns and other like animal matter to small particles	723	11th March 1870	George Atkin. Edwin Atkin. Alfred Amos Atkin.
Mills for crushing and grinding (*Partly communicated by Charles Ross and John Ross.*)	967	2nd April 1870	Henry Jackson.
Mills for grinding and pulverizing mineral or other substances.	1043	8th April 1870	Allan Craig.
Improvements in the means of and apparatus for crushing ores and other mineral substances, and separating therefrom the metals which they contain, part of which improvements is applicable to the bearings of machinery generally.	1198	25th April 1870	Leonard Wray.
Apparatus for breaking and crushing stones for use in macadamizing roads, for railway ballast, for employment in the manufacture of "béton" or French concretion or mortar, and for producing sand or gravel of various degrees of coarseness. (*Communicated by Claude Leon Desmolins.*)	1239	30th April 1870	Arthur Charles Henderson.
Machinery or apparatus for breaking up, disintegrating or pulverising lumps or clods of soil in the process of agriculture.	1330	10th May 1870	Henry Aitken.
An improved machine for breaking ice for the preservation of fish and other purposes.	1520	26th May 1870	Charles Emerson Barton.
Machines for grinding, concentrating and refining tin and other ores, in order to extract the metals in a pure state.	1561	28th May 1870	Samuel Henry Stephens.
Machinery for pulverizing or reducing ores and other hard substances.	1602	2nd June 1870	Francis Dingey.
An improved machine for breaking stones (*Communicated by Del Ferdinand.*)	1728	16th June 1870	Baldwin Fulford Weatherdon.
Manufacture of Portland cement (*grinding chalk and clay.*)	1963	12th July 1870	William Goreham.
Mills for crushing mineral and other substances	2098	26th July 1870	John Withinshaw.
Cutting, boring, grinding and pulverizing stone and other hard substances. (*Communicated by Benjamin Chew Tilghman.*)	2147	1st Aug. 1870	Alfred Vincent Newton.
Paints and pulverizer therefor	2191	6th Aug. 1870	James Johnson.
Improvements in the extraction of juice from sugar cane and in apparatus employed therein. (*Communicated by Jean François Cail.*)	2212	9th Aug. 1870	John Henry Johnson.
Machinery for crushing, grinding and triturating stone, minerals, ores and quartz, also for washing and separating metals from ores, and for washing, separating and amalgamating gold from quartz.	2239	12th Aug. 1870	George Henry Goodman.
Certain improvements in apparatus or mechanism known as the "silk bolter," employed for dressing flour, and which may also be employed for dressing other ground or pulverized material.	2407	3rd Sept. 1870	Stephen Dawson. Edward Davies.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GRINDING MINERALS, &c.—*continued.*			
A continuous process for treating the ores of metals and the apparatus and mechanical appliances used therein. (*Communicated by Robert Spencer.*)	2668	8th Oct. 1870	William Edward Newton.
Hollow rolls or cylinders attached to spindles - (*rolls for crushing.*)	2789	22nd Oct. 1870	Anthony Gapper Southby.
Machinery for grinding, particularly applicable for grinding gold and other expensive colors used by potters and others. - - - - -	2894	3rd Nov. 1870	Richard Bewley. Isaac Cotton, junior.
Cutting, boring, grinding and pulverising stone and other hard substances. (*Communicated by Benjamin Chew Tilghman.*)	2900	3rd Nov. 1870	Alfred Vincent Newton.
Improvements in dressing, crushing and amalgamating metallic ores and in apparatus employed for these purposes.	3241	10th Dec. 1870	John Boyns.
Machinery or apparatus for breaking, crushing and pulverizing cement and other substances. (*stones or road metal.*)	3295	16th Dec. 1870	Julius Frederick Moore Pollock.
Improvements in machinery for stamping and breaking ores and separating the same from substances with which they may be combined, parts of which improvements are also applicable in the construction of steam hammers and steam-engines. - - - - - -	3357	23rd Dec. 1870	James Willoughby. William Willoughby. Joseph Willoughby. Samuel Willoughby.
GRINDING AND SHARPENING; FLAT GRINDING AND POLISHING; GRINDING-SURFACES; EMERY, SAND AND GLASS PAPERS AND CLOTHS.			
An improved apparatus for sharpening knives and in a composition to be used therewith. (*Communicated by Zenas Colman Robbins and Henry Alfred Robbins.*)	87	11th Jan. 1870	William Robert Lake.
Rotary knife-cleaning and polishing machines -	100	12th Jan. 1870	George Kent.
Certain improvements in apparatus to be employed for sharpening scissors, knives or other similar edged tools. - - - - - -	155	19th Jan. 1870	William Henry Sleigh. John Richardson.
Machinery or apparatus for pointing or grinding hackle, gill, card or other pins and teeth used in machinery for preparing woollen, cotton, flax or other fibrous substances.	171	19th Jan. 1870	John James Richardson.
Carding-engines for carding cotton and other fibrous substances. (*grinding the flats.*)	275	31st Jan. 1870	Thomas Bispham Kay.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GRINDING, SHARPENING, &c.—*continued.*			
Apparatus for grinding the card-covered surfaces of portions of the carding-engines employed in the preparation of cotton and other fibrous materials.	355	7th Feb. 1870	Joseph Standring Dronsfield.
Machinery for making horse-shoe nails - - (*forming the nail points.*) (*Communicated by Daniel Dodge.*)	533	23rd Feb. 1870	Alexander Melville Clark.
An improved combined carving fork and knife sharpener.	825	19th March 1870	George Kent.
Improvements in machinery for grinding and polishing saws, also applicable for grinding and polishing sheets or plates of steel and other metals. (*Communicated by William Jackson Lippincott.*)	889	26th March 1870	Charles Denton Abel.
Treatment of metal surfaces coated by electro deposition with nickel. (*burnishing with silver or gold.*)	1068	12th April 1870	Isaac Adams, junior.
Improvements in reaping and mowing machines and in apparatus for sharpening the cutters of such machines. (*Communicated by Auguste Bernard Albaret.*)	1165	21st April 1870	John Henry Johnson.
Improved machinery for pointing and finishing nails. (*Communicated by Sebastien Schlesinger.*)	1351	11th Aug. 1870	William Edward Newton.
Manufacture and ornamentation of articles of glass (*grinding or polishing.*)	1420	17th May 1870	Thomas George Webb.
Improved machinery for grinding hand saws - (*Communicated by William Finley Semple.*)	1487	23rd May 1870	William Edward Newton.
Apparatus for grinding or polishing plate glass or slabs of slate, stone, marble or other substances. - - - - - -	1545	27th May 1870	Peter Graham Buchanan Westmacott.
Improvements in planishing, levelling and creasing frying pans and other metallic articles, and in tools or apparatus employed for those purposes. - - - - - -	1807	25th June 1870	Samuel James Fellows. Edgar Fellows.
Means and apparatus employed in cutting various substances.	1909	6th July 1870	John Bourne.
A new description of knife steel for instantly imparting an uniform keen edge on table knives, butchers' knives and large knives generally.	1978	13th July 1870	William Harle Horsfield.
Machinery or apparatus for reducing wood, metal, or other hard material to fixed patterns. (*Communicated by Frederick Baldwin.*)	1987	14th July 1870	Giovanni Sconcia.
Cutting, boring, grinding and pulverising stone and other hard substances. (*polishing.*) (*Communicated by Benjamin Chew Tilghman.*)	2147	1st Aug. 1870	Alfred Vincent Newton.
Paints and pulverizer therefor - - - - (*pulverising substances for cleaning and polishing plated goods.*)	2191	6th Aug. 1870	James Johnson.
Certain improvements in the construction of cylinders and rollers used for carding cotton, wool, silk or other fibrous substances, also in roller carding generally. (*grinding and brushing out.*)	2267	16th Aug. 1870	Evan Arthur Leigh.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GRINDING, &c.—*continued.*			
Improvements in lithographic printing and in machinery used for that purpose, parts of which invention are applicable to other printing machinery. (*grinding the stones.*)	2306	20th Aug. 1870	Joseph Lewis.
Improvements in lithographic printing machines, and in apparatus for grinding or preparing the surface of the stones used for lithographic purposes. (*Communicated by Richard March Hoe.*)	2366	29th Aug. 1870	William Edward Newton.
An improved type casting, breaking, rubbing and setting machine. (*self-clearing rubbers.*)	2527	20th Sept. 1870	John Alfred Thomas Overend.
Sharpening and polishing sewing-machine needles (*Communicated by Eduardo E. Blyth.*)	2541	22nd Sept. 1870	David Monroe Childs.
An improved machine for polishing metal and other surfaces. (*Communicated by Peter Fitz Randolph, Augustus Knapp Van Horne and Henry Vroom Voorhees.*)	2615	1st Oct. 1870	George Haseltine.
Machinery for the manufacture of toilet or dress pins and other pins. (*polishing cylinder.*)	2756	20th Oct. 1870	William Twining. Joseph Dangerfield.
Apparatus for cleansing, brushing and polishing tin plates.	2757	20th Oct. 1870	John Isaac Evans.
Improved machinery for pointing nails (*Communicated by Lawrence Barnes.*)	2899	3rd Nov. 1870	William Edward Newton.
A new machine for grinding, polishing and concaveing circular and other saws, and other tools and substances.	2937	8th Nov. 1870	Edward Joseph Jones.
Means or apparatus for cleansing and polishing forks and spoons.	3103	26th Nov. 1870	James Osborn Spong.
GUNPOWDER AND EXPLOSIVE COMPOUNDS; POWDER FLASKS; XYLOIDINE, PYROXILINE.			
A new simplified explosive substitute for gunpowder.	119	14th Jan. 1870	Pedro Nisser.
Treatment of xyloidine to be employed for purposes useful in the arts.	180	20th Jan. 1870	Daniel Spill.
A new or improved compound or explosive mixture to be used as a substitute for gunpowder.	507	21st Feb. 1870	Jules Fournier.
Receptacles intended to be used as a protection from fire. (*for storing gunpowder.*)	694	9th March 1870	James Duffey.
Production of compounds containing xyloidine	787	16th March 1870	Daniel Spill.
Manufacture of fulminating compounds	898	28th March 1870	John Wm. Perkins.
Apparatus for compressing gunpowder and other substances into pellets.	1595	2nd June 1870	Jabez James.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GUNPOWDER, &c.—*continued.*			
Improvements in the manufacture of "pebble" gunpowder, and in means or apparatus for the same.	2816	26th Oct. 1870	Frederick Burney.
Manufacture of gun cotton - - -	2867	31st Oct. 1870	Robert Punshon.
Improved machinery or apparatus for the manufacture of gunpowder.	2986	14th Nov. 1870	James Davidson.
Magazines, reservoirs or receptacles for storing gunpowder, cartridges and other explosive materials.	3256	13th Dec. 1870	William Palliser.
GUTTA-PERCHA AND INDIA-RUBBER. (*Preparing, Treating, Vulcanising.*)			
Machinery for cleansing and preparing gutta-percha, india-rubber and like substances.	41	5th Jan. 1870	Edwin Thomas Truman.
Diving dresses - - - - - (*vulcanizing.*)	638	4th March 1870	Henry Siebe. William Augustus Gorman. Thomas Forster.
Improvements in vulcanizers or apparatus employed in vulcanizing india-rubber, which improvements may also be applied to the regulation of the flow of gas for various purposes.	726	11th March 1870	Charles Jackson.
Improvements in treating and preparing gutta-percha and other like substances, and in machinery used in the preparing process.	878	25th March 1870	Edwin Thomas Truman.
A new or improved process for dissolving or reducing crude or manufactured indian-rubber.	982	4th April 1870	William Newton Mac Cartney.
A new or improved hardening composition and its employment with india-rubber gums and oils. (*Communicated by John Ballou Newbrough.*)	1155	20th April 1870	John Henry Johnson.
Cutting, boring, grinding and pulverizing stone and other hard substances. (*Communicated by Benjamin Chew Tilghman.*)	2147	1st Aug. 1870	Alfred Vincent Newton.
GUTTA-PERCHA AND INDIA-RUBBER AS APPLIED IN VARIOUS MANUFACTURES.			
Weaving plain and elastic terry fabrics - - (*having india-rubber strands.*)	7	1st Jan. 1870	Henry Turner, the younger.
Improvements in spring seats, chairs and mattresses, such improvements being also applicable to other purposes. (*Communicated by Pierre Gustave Nourissé.*)	69	8th Jan. 1870	Alexander Melville Clark.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GUTTA-PERCHA, &c.—*continued.*			
Improvements in stoppers for jars, carboys, bottles, casks and other vessels, and in the manufacture of such articles to which the stoppers may be applied.	135	17th Jan. 1870	Thomas Welton.
Construction and manufacture of wheels for vehicles (*india-rubber tires.*)	245	27th Jan. 1870	John Howard Kidd.
New or improved modes and means of covering and insulating the wires of electric telegraphs.	272	31st Jan. 1870	Robert Dick.
Improvements applicable to telegraphic purposes -	274	31st Jan. 1870	Thomas Walker.
Improvements in india-rubber manufactures and in tools or machinery employed therein. - (*sacks, tubular fabrics, boot gussets, &c.*)	295	1st Feb. 1870	George Broadhurst. John Swindells. John Kershaw.
Improvements in machinery or apparatus for washing or scouring and drying wool and other fibrous materials and yarns or threads.	386	9th Feb. 1870	John Petrie, junior.
An improved method of constructing submarine telegraph cables for the support of insulated conductors for communicating intelligence between nations and foreign countries by electricity.	409	11th Feb. 1870	James Story.
An improved portable frame for playing billiards upon an ordinary table.	418	12th Feb. 1870	James Henry Passingcomb Colson.
Machines for printing and indenting dates on or into railway and other tickets, and for analogous purposes.	425	12th Feb. 1870	William Thomas Whiteman.
Improvements in cocks and valves and in packing for the same. - - - - -	433	14th Feb. 1870	William Whieldon. John Beck.
Arrangement and construction of cases for bottles, glasses or drinking cups and other articles. (*Communicated by Jules Mathieu.*)	438	15th Feb. 1870	Henry Bernoulli Barlow.
Producing "photographic" effects by lithographic printing on woven fabrics. (*rubber tympan.*)	513	22nd Feb. 1870	Robert Gardner.
Construction of wheel tyres - - -	599	1st March 1870	Louis Sterne.
Electric cables or conductors - - -	627	3rd March 1870	Samuel Elkens Phillips.
Manufacture of artificial leather - - - (*Communicated by Soren Sörensen.*)	728	11th March 1870	Peter Christian Thamsen.
An improved holder for cartridges - - - (*Communicated by Monsieur Pierre Marie Fouque.*)	739	12th March 1870	Achille du Bled. Paul Chenaillier. Jean Auffret.
Collars and saddles for horses and other animals -	760	15th March 1870	Charles Stockbridge.
Gun carriages and their slides - - - (*Communicated by John Wall Wilson.*)	770	15th March 1870	William Edward Newton.
Certain improvements in elastic rolls or tubing for clothes wringers and various other purposes, as well as in machinery for manufacturing the same.	786	16th March 1870	Joel Moulton.
Wheels - - - - - - -	820	19th March 1870	William Alexander Lyttle.
Improvements in wheels for rail or tramway locomotive engines and carriages or vehicles and in the permanent way for the same.	827	19th March 1870	Robert Francis Fairlie.
Improvements in shoeing horses and in the modes and means or appliances connected therewith.	831	21st March 1870	Parlane McFarlane Walker.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GUTTA-PERCHA, &c.—*continued.*			
Wheels for railway engines and carriages - - (*Communicated by James Atkins Woodbury.*)	837	21st March 1870	William Robert Lake.
Improvements in the treatment of hides and skins in tanning, and otherwise utilising all portions or pieces thereof, and in the treatment of goods already tanned. - - -	863	24th March 1870	Henry Richardson Fanshawe. William Henry Smith.
Improved means for rendering water-tight dock gates, ships' ports or other like openings, also applicable to windows, doors and other like openings.	912	29th March 1870	Robert Saunders.
Ventilation of hats - - - -	940	31st March 1870	Franklin Tocher.
Manufacture of waterproof garments - -	1026	7th April 1870	Charles Montagu.
Construction of carriages, vehicles and velocipedes	1039	8th April 1870	André Etienne.
Wheels for carriages, wagons, carts and other vehicles. (*of vulcanite.*)	1095	14th April 1870	Laurence Stewart.
A new or improved hardening composition and its employment with india-rubber, gums and oils. (*Communicated by John Ballou Newbrough.*)	1155	20th April 1870	John Henry Johnson.
An improvement in wrappers for papering needles, and a new or improved instrument or apparatus for measuring or counting needles for papering.	1178	22nd April 1870	Victor Milward.
Manufacture of heels for boots and shoes - -	1211	27th April 1870	Walter Hart.
Means of stoppering or closing the necks, mouths or openings of bottles, jars and other similar vessels.	1218	27th April 1870	John Underwood.
Shoes for horses and other animals - - (*india-rubber sole.*)	1247	2nd May 1870	John Howard Kidd.
Improvements in wheels for carriages, vehicles and locomotive apparatus, and in wheels and pulleys for driving machinery. (*india-rubber tyre.*)	1279	4th May 1870	Henry Kinsey.
Improvements in the manufacture of mustard and other plasters, and in machinery for the same. (*Communicated by Paul Rigollot.*)	1315	7th May 1870	Emile Guenin.
Apparatus for photographic printing - -	1333	10th May 1870	Benjamin Joseph Edwards.
Manufacture of elastic fabrics suitable for gussets -	1369	13th May 1870	James Miller. James Miller, junior.
Manufacture of elastic fabrics - - -	1387	14th May 1870	Luke Turner.
Manufacture of bearings, slides and packings of steam-engines and other machinery. (*Communicated by Eliza Dexter Murfey.*)	1401	16th May 1870	John Henry Johnson.
Construction of vehicles used on railways, tramways or common roads. (*of vulcanised caoutchouc.*)	1432	18th May 1870	Walter Brodie.
Means for regulating the flow or controlling the supply of water or other fluids.	1486	23rd May 1870	Alfred Long.
Improvements in parlour foot-balls and other india-rubber articles, which improvements relate partly to illustrating the surfaces of such articles and partly to inflating the same.	1505	24th May 1870	Thomas Jefferson Mayall.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GUTTA-PERCHA, &c.—*continued.*			
Ornamenting the edges and margins of boots and paper. (*with india-rubber printing surfaces.*)	1587	31st May 1870	John Leighton, senior.
An improved elastic sandcrack boot or hoof covering for horses.	1596	2nd June 1870	Thomas Holder.
Compounds for insulating telegraph wires, the manufacture of flexible tubing, and other like purposes.	1626	4th June 1870	Daniel Spill.
Improvements in carriage and other wheels, being also applicable to horse shoes.	1642	7th June 1870	Barnard Holt.
An improvement in towels, rubbers and wipers - (*a series of threads of india-rubber.*)	1678	10th June 1870	Henry Richardson Fanshawe.
Improvements in railway and other carriage wheels by the application of vulcanised india-rubber or any compound thereof.	1703	14th June 1870	William Aubrey Chandler.
An improved cork, stopper or plug - -	1730	17th June 1870	Gilbert Stanton Fleming.
Bottles and stoppers and other articles to be employed therewith, some of which are applicable to other purposes and the manufacture thereof.	1749	18th June 1870	Alexander Southwood Stocker.
Treating or preparing certain lubricating oils -	1752	18th June 1870	John Orr Ewing. Joseph James Coleman.
Apparatus for communicating on railway trains -	1762	21st June 1870	George Atterbury. George Whitehouse.
Fastenings or connections for securing the cables and standing rigging of ships and for other like purposes. (*rubber cushion.*) (*Communicated by William Carlton Ireland.*)	1764	21st June 1870	William Robert Lake.
Wheels to be used on railways - - (*application of india-rubber tyres.*) (*Communicated by Alexander Peyman and John Thomas Chaplin.*)	1936	8th July 1870	Philip Chaplin.
Fountain pens - - - - -	1964	12th July 1870	John Butcher.
Manufacture and construction of india-rubber cushions for billiard tables.	1975	13th July 1870	Charles Moseley.
Manufacture of elastic fabrics - - -	2072	22nd July 1870	Archibald Turner.
Looms for weaving - - - - -	2085	23rd July 1870	William Lawrence Mitchell.
Cutting, boring, grinding and pulverizing stone and other hard substances. (*Communicated by Benjamin Chew Tilghman.*)	2147	1st Aug. 1870	Alfred Vincent Newton.
Improvements in the mode of extracting the filaments of straw and the bark of the mulberry tree, and in converting the same into pulp for the manufacture of paper and in the apparatus therefor.	2190	6th Aug. 1870	Gustave Demailly.
Improved means or apparatus for protecting or shielding soldiers in battle.	2192	6th Aug. 1870	Joseph Marsden.
Construction of elastic tyres for wheels - -	2246	12th Aug. 1870	Isaac Blue Harris.
Manufacture of elastic fabrics - -	2272	16th Aug. 1870	Archibald Turner. Luke Turner.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GUTTA-PERCHA, &c.—*continued.*			
Improvements in the manufacture of "spool" tubes and other tubes of paper, and in dyeing or coloring and marking the same, and in machinery or apparatus to be employed therefor. (*india-rubber pasting, belts.*)	2292	19th Aug. 1870	William Ambler.
Floating dredgers or machinery for loosening, raising, transporting and depositing sand, gravel and mud. (*Communicated by James Burt.*)	2438	9th Sept. 1870	Thomas Burt.
Construction of elastic tyres for carriage wheels -	2452	10th Sept. 1870	William Erskine Bartlet.
A new or improved suit or dress and fittings for saving life in water.	2510	17th Sept. 1870	John Benjamin Stoner.
Improvements in steam, air and gas, and in fluid or hydraulic engines.	2554	23rd Sept. 1870	William Firth.
Means of securing elastic tyres to wheels -	2620	1st Oct. 1870	Louis Sterne.
Improvements applicable to the tyres of the running wheels of road locomotives. - -	2627	3rd Oct. 1870	Thomas Aveling. David Greig.
Improvements in and connected with elastic wheel tires.	2630	4th Oct. 1870	Robert William Thomson.
Improvements in saddle cloths and horse clothing and blankets and in pouchos or other coverings for man and beast. (*Communicated by Robert Spencer.*)	2743	18th Oct. 1870	William Edward Newton.
India-rubber or caoutchouc tires for wheels -	2746	19th Oct. 1870	William Francis Reynolds. Jonathan Aldous Mayo.
An improved mode of colouring india-rubber and other like waterproof fabrics or materials.	2761	20th Oct. 1870	Alfred Ford.
An improved mode of producing a hard protective or ornamental covering or coating of compounds of india-rubber or gutta-percha upon metal and other surfaces. (*Communicated by George Temple Chapman.*)	2790	22nd Oct. 1870	William Robert Lake.
Fixing india-rubber tires and tires of any compressible materials to wheels of bicycles, velocipedes, bath chairs and other light wheels for locomotion.	2791	24th Oct. 1870	John Wilkins.
"Low water alarms" for steam generators or water heaters.	2821	27th Oct. 1870	Robert Lees.
Improvements in and relating to ball valves and floats.	2826	27th Oct. 1870	William Ross.
Springs for railway carriages - - - (*Communicated by Richard Vose.*)	2829	27th Oct. 1870	William Robert Lake.
Machinery or apparatus employed in the manufacture of felt hats and other like coverings for the head.	2877	1st Nov. 1870	Joseph Vero.
Improvements in boxes and bearings for axles and other shafts and in compositions to be applied thereto. (*Communicated by Eliza Dexter Murfey.*)	2879	1st Nov. 1870	John Henry Johnson.
An improved method of imparting elasticity to leather skins, cotton, cloth and other similar or like articles.	2911	4th Nov. 1870	John Griffits.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
GUTTA-PERCHA, &c.—*continued.*			
An improved method of tapping barrels, casks and other vessels in which taps or cocks are used to draw off the liquid contents thereof. (*binding round taps.*)	2918	4th Nov. 1870	Charles William Meiter. Thomas William Smith.
Machinery for cutting or shaping wood	3029	18th Nov. 1870	Allen Ransome.
An improved alarum for public or private buildings, bankers' strong rooms, safes and other depositories intended to contain valuable property and documents.	3136	30th Nov. 1870	Charles Heirons.
Mechanism or apparatus to be employed for wringing and mangling woven fabrics.	3146	1st Dec. 1870	Silas Schofield. Alfred Schofield.
Manufacture or production of plain and fancy nets and laces.	3158	1st Dec. 1870	William Carter.
Illuminating gratings for roads, streets and other ways, and for flues and roofs generally. (*Communicated by Theodore Hyatt.*)	3195	5th Dec. 1870	John Henry Johnson.
Compounds for waterproofing textile fabrics and other surfaces.	3200	6th Dec. 1870	John Macintosh.
Improved means for securing the joints of steam-boilers and tubes.	3206	6th Dec. 1870	James Howard. EdwardTenney Bousfield.
Construction of road wheels for road steamers and traction-engines.	3219	8th Dec. 1870	Vaughan Pendred.
Horse-shoes	3248	12th Dec. 1870	Josiah Harris.
Treating certain mineral lubricating oils and paraffine. (*combining caoutchouc with solid paraffine.*)	3261	13th Dec. 1870	Joseph James Coleman.
Springs chiefly designed for railway and other carriages. (*Communicated by Patrick Sarsfield Devlan, Isaac Pennington Wendell and Stephen Paschall Morris Tasker.*)	3290	15th Dec. 1870	William Robert Lake.
Improvements in locks and fastenings, especially applicable for railway carriage and other doors.	3356	22nd Dec. 1870	James Morrison.
Travelling wheels for road locomotives	3371	24th Dec. 1870	Nathaniel Clayton. Joseph Shuttleworth.
HAIR-DRESSING AND PERFUMERY; SHAVING MUGS; WORKING IN HAIR.			
A new compound and process for eliminating diseases and the cause of disease from the human body. (*cosmetic.*)	308	2nd Feb. 1870	Alfred Manks Mort.
Improved apparatus for disentangling and arranging hair.	441	15th Feb. 1870	Gustav Lieberknecht.
Caps for scent and other bottles or vessels	590	28th Feb. 1870	Henry William Dee.
A new or improved moustache support	1616	4th June 1870	John Burley. Laurence Glover.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HAIR-DRESSING, &c.—*continued.*			
Travelling and other bags, cases and boxes - (*for the toilet or other fittings.*)	1666	13th June 1870	Fabian James Knewstub.
Bottles and stoppers and other articles to be employed therewith, some of which are applicable to other purposes, and the manufacture thereof. (*pomade bottles.*)	1749	18th June 1870	Alexander Southwood Stocker.
Manufacture of oil and other products of petroleum. (*for dressing hair.*) (*Communicated by Charles Toppan.*)	2762	20th Oct. 1870	William Robert Lake.
Manufacture of nets used for ladies' hair - -	3092	25th Nov. 1870	William Carter.
HAMMERS, AXES, PICKS, SPADES, TROWELS.			
Mill bills - - - - - - -	276	31st Jan. 1870	Thomas Lee. William Lee. Edward Lee.
An improved combination implement consisting chiefly of a hammer, screwdriver, nail-puller and rule.	434	14th Feb. 1870	Frank Theophilus Ferguson.
Improvements in combination tools, which improvements are also partly applicable to scissors, pliers and such like instruments. (*Communicated by Emile Granier.*)	520	22nd Feb. 1870	Alexander Melville Clark.
Improvements applicable to picks and other tools or implements attached to handles. (*hammers, axes, adzes, &c.*)	534	23rd Feb. 1870	Charles Davy.
Millstone picks - - - - -	698	9th March 1870	William Oldfield Wilson.
Direct-acting power hammers and machinery for crushing and pulverising. - - - - -	715	10th March 1870	Samuel Chatwood. John Sturgeon.
Atmospheric stamps and hammers, partly applicable to other purposes.	749	15th March 1870	William Husband.
Machinery or apparatus for cutting or dressing stone. (*arranging the hammers.*)	803	18th March 1870	Robert Girdwood.
Mill bills or chisels and picks for dressing millstones, marble or other stones.	858	23rd March 1870	James Charles Cushion.
Apparatus for dressing and furrowing millstones - (*construction of mill bills.*)	1120	16th April 1870	James Lee Norton.
Improved machinery for pointing and finishing nails. (*hammer.*) (*Communicated by Sebastien Schlesinger.*)	1351	11th Aug. 1870	William Edward Newton.
Improvements in the manufacture of tilt and forge hammer heads and in hursts and tail hoops.	1734	17th June 1870	Joseph Eaton Lee.
Improvements in pneumatic stamps and hammers, also applicable to machinery for driving piles, cutting, splitting or dressing stone, and for boring rocks.	2011	16th July 1870	William Husband.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HAMMERS, &c.—*continued.*			
A machine for striking blows by hammers and for drilling holes in rock, stone, and other hard substances.	2170	4th Aug. 1870	Ingleby Thomas Miller.
Picks, adzes, axes and tools of a similar character -	2188	6th Aug. 1870	William Tarleton Bury.
An improved mode of shafting picks, axes, adzes and tools of a similar character.	2189	6th Aug. 1870	William Tarleton Bury.
An improved means of attaching handles to scoops and other articles. (*Communicated by Henry Courtis.*)	2487	15th Sept. 1870	John Courtis.
Apparatus for hammering and planishing sheet metals.	2793	24th Oct. 1870	Charles Emanuel Miller.
Entrenching or digging tools - - - (*pick, hoe and spade.*)	2798	24th Oct. 1870	Jasper Henry Selwyn.
An improved mode of protecting troops under fire - (*entrenching spade.*)	2860	31st Oct. 1870	William Shepard Wetmore.
Improved machinery for pointing nails - - (*Communicated by Lawrence Barnes.*)	2899	3rd Nov. 1870	William Edward Newton.
Machinery for cutting or shaping wood - - (*forming hammer handles.*)	3029	18th Nov. 1870	Allen Ransome.
Machinery for forging or manufacturing untapped nuts intended for screw bolts. (*angular hammers.*)	3095	25th Nov. 1870	John Whittaker.
Improved apparatus or combination tool for military and other purposes.	3243	10th Dec. 1870	John Collis Browne.
Improvements in the manufacture of tilt and forge hammer heads and in hurst and tail hoops.	3267	14th Dec. 1870	Joseph Eaton Lee.
Improvements in machinery for stamping and breaking ores and separating the same from substances with which they may be combined, parts of which improvements are also applicable in the construction of steam hammers and steam-engines. - - - - - -	3357	23rd Dec. 1870	James Willoughby. William Willoughby. Joseph Willoughby. Samuel Willoughby.
Attaching picks and other tools or implements to handles. (*axes, adzes, hoes, &c.*)	3361	23rd Dec. 1870	Joseph Jackman.
Spades, shovels, forks and other like implements -	3400	30th Dec. 1870	David Yardley.
HARNESS, SADDLES, CURBS, WHIPS; RELEASING FROM HARNESS; SHEARING AND GROOMING HORSES; NOSE-BAGS; DOGS' MUZZLES.			
Improvements in harness for draught animals, and in connecting and disconnecting devices to be used therewith. (*Communicated by J. B. Crosby.*)	8	1st Jan. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HARNESS, &c.—*continued.*			
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion. (*grab links for cart and harness gear.*)	175	20th Jan. 1870	James Mase Kilner.
Mode of connecting traces to carriages - -	244	27th Jan. 1870	John William Currier.
Manufacture of spur boxes - - -	287	1st Feb. 1870	Benjamin Latchford.
An improved machine or apparatus for clipping horses or other animals.	427	14th Feb. 1870	John Flear.
Shearing and clipping apparatus - - -	458	16th Feb. 1870	George Twigg.
A new method or methods for extracting and purifying mill waste, refuse flock material, and removing dyed colours and re-dying the same into other colours for re-manufacture, for using certain agents employed in the process, and thereby making a manure. (*obtaining woollen flock for saddlery, &c.*)	530	23rd Feb. 1870	George Rydill.
Collars and saddles for horses and other animals -	760	15th March 1870	Charles Stockbridge.
An improved buckle or fastening - - - (*for harness.*)	768	15th March 1870	John Beckett. Richard Levers.
Improvements in the treatment of hides and skins in tanning, and otherwise utilizing all portions or pieces thereof, and in the treatment of goods already tanned. - - - (*for harness.*)	863	24th March 1870	Henry Richardson Fanshawe. William Henry Smith.
Sheet-metal saddle trees - - - -	980	4th April 1870	William Johnson.
Improvements in whiffle-trees and in devices employed therewith for readily connecting and disconnecting horses and vehicles. (*Communicated by Edward Pugh Jones.*)	1074	12th April 1870	William Robert Lake.
An improved bit - - - - - (*Communicated by Martin Camalez.*)	1609	3rd June 1870	Michael Henry.
Facilitating the mounting a horse or velocipede or bicycle or other vehicle.	1618	4th June 1870	Charles Kenney.
Muzzles for dogs - - - - -	1692	13th June 1870	Frederick William Granham. Benjamin Butterfield.
An improved mode of harnessing horses to carriages, gigs and other vehicles, and in the apparatus or means employed therefor.	1874	2nd July 1870	Robert McHardy.
Manufacture of certain ornamental and useful articles, such as buttons, studs or other attachments for dress, knobs for doors and drawers, chair nails, harness mounts, and for various other purposes analagous to these. - - -	1902	5th July 1870	John William Hoffman. Frederic Arthur Harrison.
An improved waterproof fabric applicable for rugs, carpets, tents and other coverings or wrappers. (*saddle cloths.*)	1950	9th July 1870	Donald Nicoll.
An improved alloy or metal - - - (*for harness mountings.*) (*Communicated by James C. Booth.*)	2382	1st Sept. 1870	Campbell Morfit.
An improved fastening for garments and other articles or purposes. (*for harness.*) (*Communicated by Joseph Edward Dallon.*)	2477	14th Sept. 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HARNESS, &c.—*continued.*			
Riding saddles	2531	21st Sept. 1870	William Harvey.
Saddles	2614	1st Oct. 1870	Joseph Moody.
Improvements in the manufacture of boots and shoes or other coverings for the feet, parts of which improvements are also applicable in the manufacture of millstraps or bands, harness, hose pipes and other similar articles, and in the machinery, apparatus or means to be used for effecting such purposes.	2698	12th Oct. 1870	Thomas White.
Bridles	2706	13th Oct. 1870	Thomas Huckvale.
Improvements in saddle cloths and horse clothing and blankets and in pouchos or other coverings for man and beast. (*Communicated by Robert Spencer.*)	2743	18th Oct. 1870	William Edward Newton.
A pole chain connector and disconnector for vehicles and harness and similar purposes.	2780	21st Oct. 1870	Daniel Whale.
Improved trace attachments for artillery and other harness.	3051	22nd Nov. 1870	Frederick Lee.
Improvements in the manufacture of felted fabrics and in the machinery or apparatus employed therein. (*for saddle cloth cushions, horse clothing, &c.*) (*Communicated by Robert Spencer.*)	3404	31st Dec. 1870	William Edward Newton.
HATS, CAPS, BONNETS, LADIES' CAPS, CAP-FRONTS; COVERINGS FOR THE HEAD, HEAD DRESSES, HEAD ORNAMENTS.			
Hats	263	28th Jan. 1870	George Thornhill.
Ornamenting Scotch caps or bonnets	264	28th Jan. 1870	William Orr.
Weaving of seamless articles (*caps.*)	270	29th Jan. 1870	Samuel Whitehall Mulloney.
An improved hat cover	288	1st Feb. 1870	Emile Dutasta.
Manufacture of hats, caps and other coverings for the head.	299	1st Feb. 1870	Charles Vero.
Improvements in the manufacture of yarns and fabrics containing horse hair, and in means or methods for shaping and utilising fabrics containing the same or analogous stiffening material. (*hats and caps.*)	604	1st March 1870	Henry Hayward.
Improvements applicable to hats and other like coverings for the head.	705	10th March 1870	Henry Sikes Gibson.
An improved hygienic and mecanical hat	763	15th March 1870	Paul Charles Nicolas de Ferrari.
Machinery for felting hat bodies	851	23rd March 1870	James Bradbury. John Bradbury. John Roberts.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HATS, &c.—*continued.*			
Hats and other like coverings for the head - -	913	29th March 1870	Frederick John Upton.
Ventilation of hats - - - -	940	31st March 1870	Franklin Tocher.
Improvements in machinery or apparatus for felting or "planking" the bodies of hats or other coverings for the head, which improvements are also applicable to other felting purposes. - -	1069	12th April 1870	James Kirk. Samuel Shelmerdine. Cephas Froggatt.
Manufacture of hats - - - (*Communicated by Elie Adolphe Crespin.*)	1128	18th April 1870	William Spence.
The employment of an improved material for forming the bodies of hats or other coverings for the head. (*Communicated by August Leneven.*)	2108	27th July 1870	Baldwin Fulford Weatherdon.
Water-pressure machinery to be used in the manufacture of hats and other articles.	2261	15th Aug. 1870	Edward Colston Williams.
Improved manufacture of trimmings, edgings, ruchings, plaiting and other similar goods. (*for bonnets.*)	2300	20th Aug. 1870	Hesketh Hughes.
Looms for weaving hats - - - - (*Communicated by John Van Dussen Reed.*)	2402	2nd Sept. 1870	Alexander Melville Clark.
Manufacture of hats, bonnets, and other like coverings for the head. - - -	2480	14th Sept. 1870	Abraham Silverstone. Samuel Solomons.
Machinery for "planking" or felting hat bodies, applicable also to some other purposes.	2759	20th Oct. 1870	Firth Garside.
Machinery or apparatus for stretching felt hat bodies. - - - - -	2806	25th Oct. 1870	Benjamin Dunkerley. Ralph Eaton.
Machinery or apparatus for hardening felt hat bodies and other coverings for the head.	2853	29th Oct. 1870	Joseph Vero.
Machinery or apparatus employed in the manufacture of felt hats and other like coverings for the head.	2877	1st Nov. 1870	Joseph Vero.
Machinery for preparing and washing wool and other fibrous materials, and for mixing and forming fur or materials for felt hat bodies. -	3038	21st Nov. 1870	John Charles Edwards. John Taft.
Machinery or apparatus for felting hat bodies and other articles or materials requiring to be felted.	3055	22nd Nov. 1870	Charles Samuel Royle.
Machinery or apparatus for felting or planking hat bodies or other articles made of felt. - -	3121	29th Nov. 1870	Joseph Bowden. Robert Shaw.
HEATING AND EVAPORATING; REGULATING HEAT.			
Portable stoves, lamps and lanterns - - (*for heating tools.*)	11	3rd Jan. 1870	Frederick Jones Duggan.
Regenerative hot-blast stoves for heating air, steam and other gases. - - -	34	5th Jan. 1870	Charles William Siemens. Edward Alfred Cowper. Charles Cochrane.
An improved apparatus or means to be employed for the purpose of heating churches, chapels and other buildings.	40	5th Jan. 1870	Richard Rundle. Thomas Parker.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HEATING, &c.—*continued.*			
Heating apparatus - - - (*Communicated by Jules Henry Weibel.*)	54	6th Jan. 1870	John Henry Johnson.
Improved means for warming and ventilating close carriages and boat saloons. (*Communicated by Pierre Grandjean.*)	122	14th Jan. 1870	Henri Adrien Bonneville.
Improvements in the construction of steam and other boilers, and in apparatus used therewith, for economising heat, condensing steam and saturating heated air.	124	15th Jan. 1870	James Wadsworth.
An improvement in or addition to ordinary fire-grates.	156	19th Jan. 1870	William Frederick Padwick.
Improvements in the preparation of iron ores for smelting, and in kilns or furnaces employed for that purpose. (*employing heat of the ore.*)	176	20th Jan. 1870	Charles Cochrane.
Improvements in apparatus for and in the treatment of liquid fuel, and in the application thereof to prime movers. (*obtaining caloric.*)	194	22nd Jan. 1870	Johann Maximilian Plessner.
Improvements in apparatus for evaporating and concentrating liquids, and in recovering reagents from oil refiners' and other bye-products.	208	22nd Jan. 1870	Frederick Augustus Barrow.
Producing heat and light - - -	228	25th Jan. 1870	Cromwell Fleetwood Varley. Theodore Anthony Rochussen.
Machinery or apparatus employed for heating water and other liquids.	249	27th Jan. 1870	William Henry Adcock.
Construction and application of hot-water boilers, joints and valves. - - - (*obtaining heating power.*)	256	28th Jan. 1870	Alfred William George Weeks. George Deal. George Lillywhite. Alexander Oliver Launders.
Motive-power engines and steam generators to be used therewith suitable for domestic purposes. (*drying or superheating the steam.*) (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johnson.
Apparatus for drying sugar - - - (*Communicated by Alexander Herbst.*)	415	11th Feb. 1870	William Robert Lake.
Improvements in generating gas from petroleum and other oleaginous substances, and in the apparatus to be employed therein. (*for heating purposes.*) (*Communicated by Augustin Irel Ambler.*)	424	12th Feb. 1870	Alexander Prince.
An improved machinery for generating, obtaining and applying motive-power.	440	15th Feb. 1870	Abel Hureau de Villeneuve.
Improvements in steam and other boilers, and superheating, condensing, refrigerating and evaporating vessels and apparatus, and in the plates and tubes employed.	449	16th Feb. 1870	Thomas Webster Rammell.
Apparatus for cooking, heating and lighting by gas.	463	17th Feb. 1870	Sigismund Leoni.
Soap frames - - - -	496	19th Feb. 1870	Charles Thomas.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HEATING, &c.—*continued.*			
Improved apparatus for heating knives for reaping and mowing machines in order to the partial hardening of such knives.	502	21st Feb. 1870	Samuel Osborn. William Henry Fawcett.
Machines for removing paint from wood	505	21st Feb. 1870	Samuel Hulme.
Improvements in the manufacture of gas, and in obtaining residual products from such manufacture, and in apparatus to be used in such manufacture. (*heating gas liquor with ammoniacal vapour.*)	510	21st Feb. 1870	Frank Clarke Hills.
An improved pneumatic engine (*generating heat.*) (*Communicated by John S. Morton.*)	511	21st Feb. 1870	William Robert Lake.
Cooking ranges	514	22nd Feb. 1870	Hugh Ferguson.
Manufacture of non-conducting material for preventing the radiation of heat.	531	23rd Feb. 1870	Charles Henry Aston.
Feed-water heaters for steam generators	548	24th Feb. 1870	William Brown. Charles Neale May.
Steam-boilers and engines (*heating the cylinders.*) (*Communicated by Francis Brown Blanchard.*)	549	24th Feb. 1870	William Edward Newton.
Construction of furnaces for steam-boilers (*obtaining larger heating surface.*)	561	25th Feb. 1870	Samuel Moorhouse.
Improvements in the manufacture of wrought-metal wheels and in machinery for the same. (*Communicated by Claude Brunon, Barthelemy Brunon and Gabriel Brunon.*)	583	26th Feb. 1870	Alexander Melville Clark.
Apparatus employed to produce inflammable gas from mineral or other oils, modifications of which apparatus are also applicable to be employed in the heating of water or the generation of steam	593	28th Feb. 1870	Thomas Clayton. John Taylor.
Improvements in the manufacture of yarns and fabrics containing horse hair, and in means or methods for shaping and utilizing fabrics containing the same or analogous stiffening material. (*corrugating skirts, &c. by hot surfaces.*)	604	1st March 1870	Henry Hayward.
Diving dresses (*subjecting to heat.*)	638	4th March 1870	Henry Siebe. William Augustus Gorman. Thomas Forster.
Improvements in apparatus and in combined materials for generating gases for extinguishing fires in mines, vessels, buildings or other places, such apparatus being available for warming buildings or apartments.	642	4th March 1870	Thomas Atkins.
Improvements in the mounting, working and pointing of guns, and in the construction of the carriages upon which they are mounted. (*warming turrets.*)	647	4th March 1870	Robert Anthony Edward Scott.
Means and utensils employed with apparatus used in cooking, combining arrangements for burning a light, forming a complete "kitchener." (*saving heat.*)	658	5th March 1870	Ebenezer Stevens.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HEATING, &c.—*continued.*			
Improved steam boilers and furnaces utilising the lost heat of lime, cement, brick or other circular or other kilns.	670	7th March 1870	Pierre Joseph Robine.
Improvements in the manufacture of pulp for making paper or papier-maché, and in the apparatus employed therein.	675	7th March 1870	William Law.
Construction of steam and hot-water boilers and coils in sections. (*for heating buildings.*)	695	9th March 1870	Thomas Seaville Truss.
Improvements in the manufacture of hollow cast-iron cooking utensils, and in the means or apparatus employed therefor or connected therewith, part of which apparatus is applicable to the moulding of other articles. (*utilising the escaping heat.*)	696	9th March 1870	John Neilson.
Apparatus for distilling - - - (*application of heat to the still.*)	717	10th March 1870	Joseph Wallace.
Improvements in vulcanizers or apparatus employed in vulcanizing india-rubber, which improvements may also be applied to the regulation of the flow of gas for various purposes. (*heating boilers.*)	726	11th March 1870	Charles Jackson.
An improved apparatus for the manufacture of sugar (*evaporating and concentrating.*) (*Communicated by Wilson Hardy.*)	731	11th March 1870	John Connell.
Stoves for drying bricks and other articles in pottery (*regulating the heat.*)	735	12th March 1870	James Dunnachie.
The application of cork for preventing loss of heat by radiation, and also for protecting bodies against heat.	791	17th March 1870	Germond de Lavigne.
Improvements in apparatus for evaporating, concentrating and distilling liquids, and in recovering reagents from oil refiners and other bye products.	793	17th March 1870	Frederick Augustus Barrow.
Means and apparatus for increasing the efficiency of steam generators.	844	22nd March 1870	David Joy.
Steam-boilers or generators - - - (*heating feed water.*)	868	24th March 1870	Edwin Cambridge.
Machinery or apparatus for heating and delivering metal bars. (*Communicated by Samuel A. Darrach.*)	887	26th March 1870	Albert Angell.
Improvements in apparatus and in the means employed for heating, cooling or evaporating liquids and for condensing vapours.	922	30th March 1870	George Clark.
Apparatus for evaporating sugar - - (*Communicated by José Guardiola.*)	923	30th March 1870	Henry Berthon Preston.
An improved portable oven, a modification of which may also be used for heating apartments.	964	2nd April 1870	James Wadsworth.
Apparatus or methods of heating by the circulation of hot water.	975	2nd April 1870	Ebenezer Thornton.
Utilizing exhaust steam - - - - (*warming railway carriages.*)	976	2nd April 1870	Joseph Shackleton.
Construction of kilns - - - (*transmitting heat.*)	983	4th April 1870	James Wood Baker. George Worsnop. John Grainge.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HEATING, &c.—*continued.*			
A new or improved arrangement of apparatus for forcing and projecting liquids or fluids and raising the temperature of the same.	996	5th April 1870	James More. William Leckie Graham Wright.
Apparatus for heating or warming rooms	1027	7th April 1870	Joseph Shackleton.
Construction of retorts, muffles, pots and furnaces for reducing zinc and other ores. (*regulating the heat.*)	1113	16th April 1870	Alfred Borgnet.
Improvements in applying heat and in apparatus for applying heat in various chemical and other operations, such as roasting, oxidising, calcining, decomposing and volatilising.	1124	18th April 1870	Joseph Townsend.
An apparatus for the threefold purpose of curing or drying mealy and grainy stuffs, heating, cooling and mixing fluid substances and condensing gaseous ones.	1139	19th April 1870	Melchior Nolden.
Heating stoves or furnaces	1163	21st April 1870	Maurice Chapman Hull.
Means of and apparatus for effecting fumigation, vaporization and inhalation, applicable to medicinal and sanatory purposes.	1183	23rd April 1870	Charles Harley Savory. William Robert Barker.
Boilers, air heaters, steam condensers and analogous construction for transferring heat from one fluid to another.	1191	25th April 1870	Samuel Dyer Tillman.
Construction of multitubular steam boilers (*Communicated by George Friedrich Udelhoven.*)	1207	26th April 1870	Alexander Browne.
Means of and apparatus for generating and heating steam in steam-boilers and other vessels, and for heating the liquid contents thereof.	1245	30th April 1870	Owen Murrell.
Improvements in obtaining and applying heat, and in furnaces employed therein, also in utilizing a product resulting therefrom. (*for concentrating solutions.*)	1304	6th May 1870	Thomas Don.
Apparatus or machinery for making gas from liquid hydro-carbons for illuminating purposes. (*evaporating gasoline.*) (*Communicated by Myron Hopkins Strong, Thomas Barbour and Charles Cunningham Connor.*)	1335	10th May 1870	William Robert Lake.
Apparatus adapted to be used for refrigerating and also for heating purposes.	1373	13th May 1870	Edward George Peacock.
Warming and ventilating horticultural buildings and other structures.	1382	14th May 1870	Henry Ormson.
Boilers for heating water for baths and for domestic and other purposes.	1384	14th May 1870	Frederick Nicholas Meixner. James Watmough.
Apparatus for the production of gases for lighting and heating purposes. (*Communicated by Xavier Moussard.*)	1456	19th May 1870	Alexander Melville Clark.
Apparatus for lighting and heating purposes	1467	20th May 1870	Albert Marcius Silber. Frederick White.
Mode of supplying lamps or lanterns with atmospheric air for supporting their illuminating flames. (*heating chamber.*) (*Communicated by John Henry Irwin.*)	1485	23rd May 1870	Martin Benson.
An improved thermo-press	1558	27th May 1870	Ferdinand Tommasi.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HEATING, &c.—*continued.*			
Improved means and apparatus for exhausting, forcing and purifying gas for heating and illuminating purposes.	1560	28th May 1870	William Cleland.
Furnaces for metallurgical purposes - - (*Communicated by Auguste Ponsard.*)	1624	4th June 1870	John Henry Johnson.
A new or improved boiler and furnace for heating churches, public buildings, conservatories and other like purposes.	1627	4th June 1870	John Gabb.
Improvements in and apparatus for manufacturing gas for illuminating and heating from coal oils.	1640	7th June 1870	William Wilson.
Steam-boiler and other furnaces, fire-bars and flues	1651	8th June 1870	George Lodge. George Sheard.
Steam-boilers - - - - - - (*Communicated by John Benjamin Root.*)	1675	9th June 1870	William Edward Newton.
An improved method of applying moisture and heat medicated or otherwise to the animal frame	1704	14th June 1870	Alfred Ford.
Improvements in the manufacture and fusion of cast iron, and in the apparatus connected therewith. (*using gas for heating.*)	1712	15th June 1870	Aristide Balthasard Bérard.
Gas-burners - - - - - - (*for heating.*) (*Communicated by Frederick Charles Krause.*)	1733	17th June 1870	Charles Joseph.
Apparatus for washing and boiling linen and other fabrics.	1763	21st June 1870	Henry Thomas Davey.
Improvements in smelting iron and other ores, and in the apparatus employed therefor. (*heating the blast.*)	1790	23rd June 1870	Andrew Barclay.
A new and improved apparatus for warming and ventilating carriages and boats. (*Communicated by Pierre Grandjean.*)	1816	27th June 1870	Henri Adrien Bonneville.
Steam-generators - - - - - - (*Communicated by Henry Petitpierre.*)	1843	28th June 1870	Alexander Melville Clark.
Improvements in and apparatus for preserving animal and vegetable substances. (*Communicated by Edward Robert Kent.*)	1848	29th June 1870	Edward Griffith Brewer.
Means of producing and regulating motive-power -	1859	30th June 1870	John Bourne.
Improvements in the construction and arrangement of horticultural and other buildings or erections or structures and in the means and appliances for heating the same.	1870	1st July 1870	William Robert Lake.
Improvements in machinery or apparatus and vessels for feeding, dusting, stirring, mixing or kneading flour and heating or boiling water or liquids for the manufacture of bread, biscuits, cakes, puddings, paste, buns, muffins, crumpits and other articles of food, which improvements are also applicable for beating and mixing, heating or boiling various ingredients or plastic substances, churning or other purposes.	1875	2nd July 1870	Ebenezer Stevens.
Construction and regulation of boilers for heating buildings.	1889	4th July 1870	Ambrose Marriott.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HEATING, &c.—*continued.*			
Improvements in evaporating and boiling or concentrating liquids and in apparatus employed therein. (*Communicated by Jean François Cail.*)	1900	5th July 1870	John Henry Johnson.
Furnaces chiefly designed for heating metals and ores. (*Communicated by William A. Sweet.*)	1914	6th July 1870	William Robert Lake.
Smoothing-irons - - - - (*Communicated by Théophile Klaus, Johannes Reuger and Georges Rüger.*)	1918	7th July 1870	Alexander Melville Clark.
Process of and apparatus for carburetting gases or atmospheric air so as to render the same applicable for lighting, heating or producing motive-power. (*Communicated by Emile Charles Maillet.*)	1967	12th July 1870	Bristow Hunt.
Process and apparatus employed for drying and roasting coffee, chicory, malt and other vegetable substances, also applicable to baking and desiccation generally.	1973	13th July 1870	John Ambrose Coffey.
Mechanical arrangements for cooling and heating liquids and other substances.	1994	14th July 1870	Henry Wilson.
Apparatus for warming, vaporizing and causing a free circulation of fresh air in horticultural structures and other buildings, which apparatus is also applicable for the ventilation of mines and other places.	2038	20th July 1870	Ambrose Lloyd Taylor.
Ventilating houses and building ships and railway and other carriages, and increasing or decreasing the temperature thereof.	2042	20th July 1870	William Haggett.
Ventilating and heating rooms and other places and apparatus therefor.	2075	23rd July 1870	Richard Bailey.
An economical method of heating water before using it in the service of steam-boilers of any kind.	2110	27th July 1870	William New.
Improvements in furnace grates and in apparatus connected therewith for heating water for steam boilers and for other like purpose. (*Communicated by Charles Emery Hutson.*)	2112	27th July 1870	William Robert Lake.
An improved method of and apparatus for refining and ageing liquors. (*heating the liquor.*) (*Communicated by Samuel H. Gilman.*)	2167	3rd Aug. 1870	William Robert Lake.
Multutubular apparatus for cooling or heating liquids for distillation and condensation.	2196	8th Aug. 1870	Robert Morton.
Treating metal wire to prevent loss of heat during rolling or reducing.	2243	12th Aug. 1870	John Matthew Habershon.
Apparatus for lighting and heating purposes -	2331	24th Aug. 1870	Albert Marcius Silber.
Water heaters and feeders - - -	2334	25th Aug. 1870	Alfred Alexander. David Lansley.
Improvements in apparatus for producing inflammable gas from mineral and other oils, parts of which are applicable for heating purposes. -	2354	27th Aug. 1870	Thomas Clayton. William Henry Bailey.
Improvements in apparatus for economizing the waste heat and gases from furnaces, and in means for generating, collecting and purifying gases, such gases being applicable to various useful purposes.	2377	31st Aug. 1870	Thomas Atkins.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HEATING, &c.—*continued.*			
Steam-engines - - - - (*feed-water heater.*)	2380	31st Aug. 1870	William Rudd Oswald. William Kenmire Swaddle.
Improvements in apparatus for heating water for steam-boilers and for other purposes, and for an improved vacuum valve to prevent collapse.	2430	8th Sept. 1870	James Eastwood.
Construction of fire-bars, and for the employment of them for heating the feed for generating steam, and for keeping the bars cool.	2459	12th Sept. 1870	Charles Stephens.
Apparatus suitable for scouring, washing, bleaching, dyeing and drying fibrous materials in the raw and manufactured state, and for like purposes. - - - - -	2462	12th Sept. 1870	Thomas Nesham Kirkham. Vernon Francis Ensom. George Spence.
Apparatus for the manufacture of chlorine - (*imparting or regulating heat.*)	2469	13th Sept. 1870	Henry Deacon.
Heating and evaporating of brine in the manufacture of salt. - - - - -	2597	30th Sept. 1870	William Haimer. Joseph Davies.
New or improved modes of and means or apparatus for utilizing the power and heat of the steam used in motive power engines and for other purposes. (*Communicated by Treat Timothy Prosser.*)	2606	1st Oct. 1870	William Richard Middlemore Thomson.
Machinery for spinning and twisting fibrous substances. - - - - - (*conveying heat to yarns.*)	2626	3rd Oct. 1870	William Hoyle. Joseph Harrison. Joseph Rothera.
Steam-engines - - - - - (*Communicated by John Houpt.*)	2678	10th Oct. 1870	William Robert Lake.
Certain improvements in the mode of and apparatus for charring wood, peat, bones and other vegetable and animal matters. (*utilising waste heat.*)	2714	14th Oct. 1870	Frederick Ludewig Hahn Danchell.
Gas stoves for heating and warming rooms and for other like purposes. (*for evaporating.*)	2730	17th Oct. 1870	John Stalvies.
Improvements in applying heat to steam-boilers and in apparatus therefor.	2748	19th Oct. 1870	Brierley Denham Healey.
Water-heating apparatus - - -	2771	20th Oct. 1870	Joseph Russell.
Construction of evaporating apparatus - -	2774	21st Oct. 1870	Charles Henry Moberly.
Apparatus for heating liquids and for producing a constant circulation of the same therein.	2778	21st Oct. 1870	John Stephens.
Treatment of resinous gums employed in the manufacture of varnishes. - - -	2804	25th Oct. 1870	Charles Watts. Thomas Charles Watts.
"Low-water alarms" for steam generators or water heaters.	2821	27th Oct. 1870	Robert Lees.
Improved methods of and apparatus for utilising the waste and spare or live steam, waste and spare heat, and waste and spare momentum of locomotive and other steam-engines.	2906	3rd Nov. 1870	Thomas Arthur Dillon.
Boilers for heating liquids, generating steam and other like purposes.	2909	4th Nov. 1870	Peter Brotherhood.
Construction and working of furnaces, baker's oven, fire-places, stoves and stove grates for the purpose of igniting and consuming smoke. (*for heating steam and air.*)	2922	5th Nov. 1870	William Henry Tooth.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HEATING, &c.—*continued*			
Apparatus for drying and heating, amalgamating, moulding and compressing, more especially applicable to the manufacture of preserved coal.	2941	8th Nov. 1870	Henry Walker Wood.
Improvements in or connected with furnaces for boilers, evaporating vessels and stills.	2949	9th Nov. 1870	Nedrick Jarvie. William Miller. William Calderwood.
Construction of apparatus for concentrating sulphuric acid. (*applying tubular heating apparatus to alembics.*)	2975	12th Nov. 1870	Auguste Ferdinand De Hemptinne.
Improvements in hardening steel pens and other steel articles and in apparatus employed for that purpose. (*heating pens.*)	3023	18th Nov. 1870	Richard Hipkiss.
An improved method of and apparatus for expelling volatile matters from peat.	3057	22nd Nov. 1870	Thomas George Walker.
Hydro-carbon lighting apparatus chiefly designed for locomotives and signals. (*evaporator.*) (*Communicated by Myron Hopkins Strong, Thomas Barbour, Charles Cunningham Connor and Robert Barbour.*)	3061	23rd Nov. 1870	William Robert Lake.
Improvements in the manufacture of iron and steel and castings of the same, and in apparatus employed therefor. (*Communicated by John Ware Middleton.*)	3067	24th Nov. 1870	George Haseltine.
Improvements in the manufacture of iron and steel and in furnaces and apparatus to be used in the said manufacture, parts of which improvements may also be applied to other purposes. (*superheating gases.*)	3099	25th Nov. 1870	Thomas Callender Hinde.
Boilers or steam generators (*or pans and coppers used for evaporating or heating.*)	3137	30th Nov. 1870	Robert Lees.
Gas stoves or apparatus for cooking and heating purposes.	3162	2nd Dec. 1870	John Joseph Parkes.
Machinery, apparatus or means for heating, drying and finishing woven fabrics, drying yarns, fibrous materials and other similar substances.	3163	2nd Dec. 1870	John Weems. William Weems.
Steam-boilers (*producing greater heating surface.*)	3249	12th Dec. 1870	John Hosking. John Morrison.
An improved method of applying moisture and heat medicated or otherwise to the animal frame.	3262	13th Dec. 1870	Alfred Ford.
Puddling, heating and other furnaces	3282	15th Dec. 1870	Dougald McCorkindale.
Furnaces (*for evaporating pans.*) (*Communicated by Carl Wittenstrom.*)	3292	16th Dec. 1870	John Donald.
Construction of refrigerating or ice making machines, condensers and attemperators. (*producing evaporation.*)	3296	16th Dec. 1870	John Gamgee.
Improvements in the process of extracting oil from olives or olive cakes and in machinery to be employed therefor. (*applying dry heat.*)	3307	19th Dec. 1870	Giacomo Eduardo Marchisio. Hugh Bulkeley Price. John Eliot Hodgkin.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HEATING, &c.—*continued.*			
Improvements in the mode of condensing saccharine juices and in apparatus to be employed therein, which apparatus is applicable to evaporating other liquids.	3324	20th Dec. 1870	Robert Tooth.
Apparatus for lighting and heating purposes -	3325	20th Dec. 1870	Albert Marcius Silber.
Steam-boilers - - - - - - (*Communicated by Alfredo Jahn.*)	3335	21st Dec. 1870	Robert Boyd.
Improved furnaces for melting and puddling iron or steel, and for heating iron, steel and other metals. (*and heating air for furnace supply.*)	3337	21st Dec. 1870	Andrew Howatson.
Apparatus for heating purposes, principally adapted for heating conservatories, halls, churches, rooms, offices and other structures and places. -	3341	21st Dec. 1870	Sealy James Best. John Bale.
Improvements in heating, drying and evaporating, and in apparatus to be used therein. - - (*utilising heat from steam-boilers.*)	3364	24th Dec. 1870	Christopher Rawson. Philip Ovenden. William McCree.
Improved means or apparatus for economising fuel (*heating feed-water, super-heating steam.*)	3365	24th Dec. 1870	Andrew Bell.
Improvements in paper stock and means or method of making paper pulp from wood, straw, cane, esparto grass, flax, flax tow, hemp, hemp tow, jute, jute tow, Manilla rope or Manilla tow, and all analogous material or vegetable substances, and in the treatment of materials used therein, and in apparatus for treating the same. (*alkali heating coil.*) (*Communicated by Morris Longstreth Keen.*)	3392	29th Dec. 1870	Samuel Armstrong Walsh.
Preventing incrustation in and corrosion of steam-boilers and other vessels. (*feed water heaters.*) (*Communicated by James Charles Adolphus Dick.*)	3402	31st Dec. 1870	Edward Primerose Howard Vaughan.
See also "FURNACES."			
See also "FIREPLACES."			
HOISTS, CRANES, CAPSTANS, WINDLASSES; RAISING, LOWERING AND MOVING HEAVY BODIES; RAISING FROM MINES; RAISING SUNKEN SHIPS.			
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion.	175	20th Jan. 1870	James Maze Kilner.
Improvements in apparatus and mechanical means for excavating, filling in, transporting and discharging grain, seeds and other materials. (*and raising from one floor to another.*)	212	22nd Jan. 1870	John Holdsworth.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Hoists, &c.—*continued.*			
Elevators for raising and stacking straw, hay and other similar substances.	242	27th Jan. 1870	Stephen Lewin.
An improved portable scaffolding - - (*elevating and lowering.*)	252	28th Jan. 1870	Bartolammeo Conci.
Apparatus for producing rotary motion - - (*for working hoists.*) (*Communicated by Addison Goodyear Waterhouse.*)	279	31st Jan. 1870	William Robert Lake.
Machinery for elevating corn, hay, straw and other agricultural produce.	432	14th Feb. 1870	William Tasker, the younger.
An improved method of raising, lowering and moving weights.	529	23rd Feb. 1870	Robert Punshon.
Improved apparatus for preventing accidents in the pits of mines or collieries.	591	28th Feb. 1870	Thomas Thomas.
Cranes and crabs for hoisting and hauling purposes	610	2nd March 1870	George Carr Thompson.
Hydraulic cranes or apparatus for raising, hauling and lowering weights. - - -	614	2nd March 1870	Bryan Johnson. Edward Bayzand Ellington.
Improvements in the mounting, working and pointing of guns, and in the construction of the carriages upon which they are mounted. (*lifting guns.*)	647	4th March 1870	Robert Anthony Edwards Scott.
Windlasses and capstans - - - -	737	12th March 1870	George Tyzack.
Apparatus for raising and lowering heavy bodies -	747	14th March 1870	William Arkell.
Differential pulley blocks and other apparatus for moving heavy bodies.	777	16th March 1870	Peter Murray.
Means of and apparatus for indicating or registering goods raised or lowered in breweries, granaries, warehouses and other buildings. -	871	24th March 1870	Louis Watson. Julius Hall.
Hoists - - - - -	957	1st April 1870	Charles Newhouse.
Improvements in weighing-machines, and in combining machinery for hoisting and weighing goods.	962	2nd April 1870	Andrew Ody.
Improvements applicable to winding engines for the prevention of winding over the headstocks, also applicable to other stationary engines where the weight is taken off suddenly.	1011	6th April 1870	James Sharrocks.
Improvements in steering gear and in machinery for starting, stopping and reversing heavy steam-engines and turrets, and for discharging cargo. (*working jib cranes and hoists.*)	1018	7th April 1870	Andrew Betts Brown.
Mast-head and other hoisting blocks - -	1080	13th April 1870	William Angus.
Machinery or apparatus for raising and lowering heavy bodies.	1115	16th April 1870	John Craven.
Improvements in the construction of thrust blocks, plummer blocks, and such like mechanism used in steam ships, the said improvements being applicable to all kinds of screw and lifting jacks, and for the bearings of cranes, mill shafts and such like machinery.	1141	19th April 1870	William Brown.
Mechanism for transmitting power and increasing the effectiveness of the same. - - - (*applied as a hoist.*)	1225	28th April 1870	Richard Bruno Hamel. James Brower Holden.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HOISTS, &c.—*continued.*			
An improved hoisting machine - - - (*Communicated by Henry Reedy.*)	1257	2nd May 1870	James Jennings McComb.
Apparatus for saving life and property from fire, applicable also for lowering weights for other purposes.	1259	2nd May 1870	Edwin Robert Wethered.
Valves for drawing off water and other fluids, applicable to water cranes and for other uses. (*see* "WATERING.")	1449	19th May 1870	Robert Pitt.
Safety cages for mines and shafts - -	1653	8th June 1870	Edward Clarke, John Hughes.
Improved apparatus or machinery for lifting, lowering, loading and unloading hay, corn, straw and other materials. - - - -	1666	9th June 1870	William Twaites Wright, Evan Yorath.
Rotary engines and pumps - - - (*for driving winches or cranes.*)	1679	10th June 1870	Robert Thomas Yeadon Johnson.
Improvements in machinery and in the means employed in connection therewith for raising sunken ships and other submerged bodies and for conducting other submarine operations.	1680	10th June 1870	Joseph Thomas Parlour.
Improvements in apparatus for raising sunken bodies and in the mode of operating the same. (*Communicated by Amédée Mouillard.*)	1755	18th June 1870	Alexander Melville Clark.
Fastenings or connections for securing the cables and standing rigging of ships and for other like purposes. (*for hoisting apparatus.*) (*Communicated by William Carlton Ireland.*)	1764	21st June 1870	William Robert Lake.
An internal spring coupling and brake for transmitting, stopping or regulating motion. - (*for cranes, &c.*)	1777	22nd June 1870	Léandre Mégy, Joseph de Echeverria, Felix Bazan.
Apparatus for lowering weights - - -	1803	24th June 1870	Thomas Wrightson.
An improved mode of and apparatus for raising or elevating certain kinds of paper-making materials for revolving boilers. - - -	1879	2nd July 1870	Thomas Rose, Robert Emerson Gibson.
Improvements in mine cages and in lifts for warehouses, hotels and for other places, and in apparatus connected with the said cages and lifts.	1882	2nd July 1870	Charles Holcroft.
Carriage jacks and other lifting jacks - -	1953	9th July 1870	John Phillips Barford.
Purchase capstans - - - - -	2006	15th July 1870	Hugh Muir, James Caldwell.
Steam windlasses and apparatus for controlling and securing chain cables.	2104	26th July 1870	William Horatio Harfield.
Apparatus or machinery for raising and lowering revolving shutters. - - - -	2113	27th July 1870	Thomas Kirby, Richard Brady, William Batison Kirby.
Apparatus or appliances for raising, lowering, and transporting objects. (*Communicated by Nicolaus Wonlarlarsky.*)	2183	5th Aug. 1870	Charles Denton Abel.
Balance elevators - - - - - (*Communicated by Charles Brooks Sawyer, John Wesley Labaree and Parmala William Brewster.*)	2206	9th Aug. 1870	Alexander Horace Brandon.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HOISTS, &c.—*continued.*			
Thatch-making machinery - - - (*raising to roofs, &c.*)	2219	10th Aug. 1870	Osborne Reynolds.
Arrangements and mechanism for preventing or providing against accidents in winding or hoisting machinery used for mines and other purposes. - - - - - - -	2447	10th Sept. 1870	William Barrow Turner. George Grey. Robert Brydon.
Differential pulley blocks and other apparatus for moving heavy bodies. (*winches, capstans, screw jacks, &c.*)	2501	16th Sept. 1870	Peter Murray.
Pulley blocks for raising and lowering sacks and other weights. - - - - -	2581	28th Sept. 1870	Thomas Moore. Charles Arthur Head.
Apparatus for raising and lowering weights, which apparatus is more especially intended as a fire-escape.	2616	1st Oct. 1870	Edward Dumaresq Thomas.
Machinery and apparatus for transporting passengers, goods and other articles (*endless ropes passing over pulleys.*) (*Communicated by Myles Cooper.*)	2624	3rd Oct. 1870	Leonard Cooper.
Apparatus for raising and lowering weights -	2718	14th Oct. 1870	Thomas Fearn.
Windlasses - - - - - -	2916	4th Nov. 1870	Edmund Walker. William Clarke.
Construction of lifting apparatus - - -	2929	7th Nov. 1870	Josiah Bailey.
Improved means for raising and lowering turrets in ships or vessels of war.	2992	15th Nov. 1870	James Shannon.
Machinery or apparatus for preventing "overwinding" in mines, which invention is also applicable to hoists and for other similar purposes.	2997	16th Nov. 1870	James Landless.
Apparatus for raising and lowering weights and for reducing speed.	3009	17th Nov. 1870	Jonathan Pickering.
Construction of elevators for stacking hay, corn and straw.	3073	24th Nov. 1870	William Andrews.
Apparatus to be used in moving or transporting heavy bodies. (*see* "PROPELLING CARRIAGES.")	3110	26th Nov. 1870	Robert Anthony Hardcastle.
HORSE-SHOES, SHOEING HORSES.			
Improvements in horse-shoes and in appliances to be worn therewith.	18	3rd Jan. 1870	William Cockburn, the elder.
Machinery for rolling bars for the manufacture of shoes for horses and other hoofed animals.	30	4th Jan. 1870	Edward Cottam.
Machinery for making horse-shoe nails - - (*Communicated by Daniel Dodge.*)	533	23rd Feb. 1870	Alexander Melville Clark.
An improved clog for roughing horses - -	738	12th March 1870	William Nicholson. Daniel Hopkin.
Making horse-shoes - - - -	780	16th March 1870	James Townsend Walker.
Improvement in shoeing horses and in the modes and means or appliances connected therewith.	831	21st March 1870	Parlane McFarlane Walker.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HORSE-SHOES, &c.—*continued.*			
Improvements in the manufacture of bars, plates and sheets of steel, or steel and iron combined, and in the process of welding employed in such manufacture. (*for horse-shoes.*) (*Communicated by John Absterdam.*)	856	23rd March 1870	William Robert Lake.
Improved machinery for making horse-shoe and other nails. (*Communicated by Sebastien Schlesinger.*)	973	2nd April 1870	William Edward Newton.
Improvements in the manufacture of boot and shoe heels, and tips and shoes for horses and other beasts of draught and burden, and in machinery and apparatus to be employed therein.	1203	26th April 1870	Horatio Fletcher.
Shoes for horses and other animals - -	1247	2nd May 1870	John Howard Kidd.
Improvements in rolling metallic rods or wire and in machinery employed for that purpose. (*for horse shoe nails.*)	1454	19th May 1870	James Partridge Blake.
A new or improved system of grooves for rolling and shaping iron or other metals. (*making horse shoes.*) (*Communicated by Pierre Michel Sibut, senior.*)	1553	27th May 1870	William Edward Gedge.
An improved elastic sandcrack boot or hoof covering for horses.	1596	2nd June 1870	Thomas Holder.
Improvements in carriage and other wheels, being also applicable to horse-shoes.	1642	7th June 1870	Barnard Holt.
Shoes for horses and other animals, and an improved method of fastening or securing shoes to horses' and other animals' feet.	1836	28th June 1870	Charles John Carr.
Horse-shoes - - - - - (*Communicated by Ebenezer Cate.*)	2805	25th Oct. 1870	Bristow Hunt.
Construction of horse-shoes - - - (*Partly communicated by Robert Adams.*)	2817	26th Oct. 1870	Robert Adams. George Henry Greenwood.
Improved machinery for pointing nails - - (*for horse-shoes.*) (*Communicated by Lawrence Barnes.*)	2899	3rd Nov. 1870	William Edward Newton.
Improvements in the manufacture of steel horse-shoe nails and in machinery employed therefor. (*Communicated by Henry Mulholland.*)	3018	17th Nov. 1870	George Haseltine.
Improvements in horse-shoes and in fittings connected therewith.	3199	6th Dec. 1870	Andrew Bell.
Manufacture of horse-shoes - - -	3217	7th Dec. 1870	Frederick Joseph Howard.
Horse-shoes - - - - -	3248	12th Dec. 1870	Josiah Harris.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HORTICULTURE, CONSERVATORIES, LAWN MOWING, TRAINING PLANTS.			
Lawn-mowing machines - - - (*Communicated by Samuel Coit.*)	59	7th Jan. 1870	William Robert Lake.
Cases or apparatus for transmitting and exhibiting cut flowers.	110	13th Jan. 1870	William Floyd Chapman.
Lawn-mowing machines - - - (*Communicated by James Darius Frary.*)	251	28th Jan. 1870	William Robert Lake.
Manufacture of chairs and other seats - - (*for gardens.*) (*Communicated by Wilhelm Walcker.*)	330	4th Feb. 1870	Thomas James Smith.
Construction of horticultural structures, cases or enclosed spaces for use in growing seeds, plants, fruit trees and other vegetable productions.	419	12th Feb. 1870	Benjamin Looker.
Improved apparatus for injecting and reducing liquids to a state of spray or minute subdivision. (*watering lawns, syringing plants.*) (*Communicated by Alcide Sanial du Fay.*)	673	7th March 1870	William Edward Newton.
A new apparatus for watering gardens, lawns and other purposes.	721	11th March 1870	John Wright.
Lawn edge clippers - - -	742	14th March 1870	George Townsend.
An improved distributing apparatus to be applied to garden hose, syringes and for other like purposes.	1132	19th April 1870	Samuel Barton, the younger.
Machinery or apparatus for tilling, ploughing, harrowing, digging and cultivating land. (*general gardening.*)	1263	3rd May 1870	Henry Belmont.
Glazed structures for horticultural purposes - (*fern cases, &c.*)	1349	11th May 1870	William Edgcumbe Rendle.
Warming and ventilating horticultural buildings and other structures.	1382	14th May 1870	Henry Ormson.
Boilers for heating water for baths and for domestic and other purposes. - - - (*warming greenhouses.*)	1384	14th May 1870	Frederick Nicholas Meixner. James Watmough.
Lawn-mowing machines - - - -	1405	16th May 1870	Aaron White Cook Williams. Caleb McKinney Talcott.
Construction of school furniture, also applicable to other purposes. (*garden chairs or seats.*)	1441	19th May 1870	Benjamin Cornford Muzzall.
A new or improved boiler and furnace for heating churches, public buildings, conservatories and other like purposes.	1627	4th June 1870	John Gabb.
Construction of roofs and sides of houses and other structures. (*greenhouses and plant frames.*)	1718	15th June 1870	William Jeffrey Hopkins.
An improved case for the conveyance of plants -	1830	27th June 1870	William Bull, F.L.S., F.R.H.S.
Improvements in the construction and arrangement of horticultural and other buildings or erections or structures, and in the means and appliances for heating the same.	1870	1st July 1870	William Robert Ayres.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
HORTICULTURE, &c.—*continued.*			
Buildings applicable to orchards or other horticultural purposes.	1961	12th July 1870	Alfred Gilbey.
An improved method of incorporating metal and cement in the construction of tanks, boxes, vases or pots for horticultural and other purposes, water and other pipes and conduits, artificial ponds, reservoirs, basins and rivulets, embankments of watercourses and analagous works. (*Communicated by Joseph Monier.*)	1999	15th July 1870	William Edward Gedge.
Apparatus for warming, vapourising, and causing a free circulation of fresh air in horticultural structures and other buildings, which apparatus is also applicable for the ventilation of mines and other places.	2038	20th July 1870	Ambrose Lloyd Taylor.
Ventilating and heating rooms and other places and apparatus therefor. (*heating greenhouses.*)	2075	23rd July 1870	Richard Bailey.
An improved fumigating material - - - (*for horticultual purposes.*)	2125	29th July 1870	George Cupit Fowler.
Mode of training hops, the sockets for the poles or posts of same and other posts, applicable also for the boring for water. (*Communicated by Eduardo Blythe.*)	2705	13th Oct. 1870	David Monroe Childs.
Apparatus for heating liquids and for producing a constant circulation of the same therein. (*heating conservatories.*)	2778	21st Oct. 1870	John Stephens.
Construction and manufacture of brushes for tube cleaning and other similar purposes. - - (*for lawn sweeping.*)	2808	25th Oct. 1870	William Henry Edwards. Alfred Edwards.
Road and other rollers - - - - (*garden rollers.*)	3013	17th Nov. 1870	Robert Balls Hughes.
Lawn-mowing machines - - - -	3113	28th Nov. 1870	William Milburn.
Metallic bars or clips to be used for roofing and glazing purposes. (*for horticultural houses.*)	3216	7th Dec. 1870	Thomas Alfred Bickley.
Preparing and applying slate to useful and ornamental purposes. (*borders for flower beds, pots, boxes, &c.*)	3275	14th Dec. 1870	William Boggett.
Apparatus for heating purposes, principally adapted for heating conservatories, halls, churches, rooms, offices and other structures and places. - -	3341	21st Dec. 1870	Sealy James Best. John Bale.
IMPERSONATION (*preventing.*)			
Improved means of preventing impersonation -	385	9th Feb. 1870	Charles Baylis.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
INKS AND INKSTANDS.			
Printing machinery - - - - (*ink distributing apparatus.*)	170	19th Jan. 1870	David Servante, jun.
Improvements in stamps for marking linen and in marking ink for the same, such stamps being also applicable to other purposes.	475	17th Feb. 1870	Adam Millar.
Mills for crushing and grinding - - - (*printers' inks.*) (*Partly communicated by Charles Ross and John Ross.*)	967	2nd April 1870	Henry Jackson.
An improved inkstand - - - -	1015	6th April 1870	Charles H. Wight.
An improved ink or improved inks for printing and other purposes. (*Communicated by Lewis Francis.*)	1419	17th May 1870	Benjamin Lawrence.
An improved ink or mucilage stand - - (*fountain inkstands.*) (*Communicated by Doctor Franklin Thomas Grimes.*)	1585	31st May 1870	William Edward Newton.
Production of colors from aniline in dyeing and printing. (*and writing or marking.*)	1863	30th June 1870	Robert Pinkney.
Fountain pens - - - - -	1964	12th July 1870	John Butcher.
Inking apparatus for printing presses - -	2115	28th July 1870	Israel Ludlow Garrard Rice.
Manufacture of oil and other products of petroleum. (*for printers' inks.*) (*Communicated by Charles Toppan.*)	2762	20th Oct. 1870	William Robert Lake.
Inkstands - - - - -	2796	24th Oct. 1870	Bewicke Blackburn.
INLAYING ; INLAID-WORK.			
Staining and ornamenting wood - - - (*imitation of inlaid work.*)	1689	11th June 1870	Andrew Fingar Brophy.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
INSECTS AND VERMIN (*destroying*).			
An improved trap for catching mice, rats and other vermin or animals.	853	23rd March 1870	John Baker Colbrain. William Pollard.
An improved fumigating material	2125	29th July 1870	George Cupit Fowler.
An improved mode of treating or preparing clay, lime, chalk and other matters with carbolic acid to produce a disinfectant and an insect or vermin repeller, and in apparatus for that purpose. (*Communicated by Charles Howard Jackson.*)	2269	16th Aug. 1870	Henry Bradley.
Boxes for containing furs and protecting them from the ravages of insects.	2737	18th Oct. 1870	Charles Cook.
Improved means of and apparatus for preventing the entrance of flies and other insects and reptiles into rooms or apartments of buildings, ships and carriages.	2822	27th Oct. 1870	Sarah Beauchamp Bush.
JEWELLERY, LOCKETS, BROOCHES, BRACELETS, WATCH CHAINS, SWIVELS AND KEYS.			
Attachments to be used with chains, cords, bands and such like pliable articles, especially useful amongst other purposes for securing on the person trinkets and jewellery.	26	4th Jan. 1870	Townshend Griffin.
Improvements on buttons and clasps for linen and other garments, likewise applicable for the fixture of any article of toilette to human apparel. (*snap or clasp for brooches.*)	186	21st Jan. 1870	Jules Reichel.
An improved chain suspender and fastener, which invention is also applicable for attaching brooches, studs, clasps, links, buttons and articles of jewellery or other ornaments to the dress of the user.	348	7th Feb. 1870	Henry Garner Pendleton.
Construction of caskets or boxes for jewels and other articles. (*Communicated by Jules Mathieu.*)	437	15th Feb. 1870	Henry Bernoulli Barlow.
Swivels (*for watch guards, watch and locket chains, &c.*)	753	15th March 1870	Henry Manton. James Henry Mole.
Improvements in keys for watches and other pocket time-keepers and in the time-keepers to which they are applied.	914	29th March 1870	John Alexander Lund.
Improvements in the manufacture of plait and in fastenings therefor, which improvements are applicable for jewellery and other purposes. (*for bracelets, armlets, brooches, &c.*)	952	31st March 1870	Robert Atkin.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
JEWELLERY, &c.—*continued.*			
Production of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials. (*for brooches.*)	1159	20th April 1870	George William Ley.
An improvement in or an addition to earrings -	1221	28th April 1870	William Germain.
Certain improvements in lockets, which said improvements are applicable to brooches, bracelets and other articles of jewellery. - -	2068	22nd July 1870	John Ashwin. Robert Carter.
Improvements in the manufacture of lockets, which said improvements are also applicable to miniature brooches and bracelets. - -	2129	29th July 1870	Joseph Craddock. Charles Frederick Richards.
Fastenings for bracelets and similar articles -	2256	13th Aug. 1870	Philipp Wohack.
Certain improvements in the manufacture of ornamental metallic chains and in certain appliances for producing the same. - - - (*neck chains.*)	2766	20th Oct. 1870	Walter Bancroft. John Wood.
An improved box or case for containing jewels, deeds and other valuables, applicable also as a toy puzzle.	3032	19th Nov. 1870	Rupert Drury.
Lockets and other articles for the reception of portraits, inscriptions or devices. (*brooches, bracelets, &c.*)	3072	24th Nov. 1870	Edmund Barker.
Bracelets - - - - -	3109	26th Nov. 1870	Charles Thomas Shaw.
Improvements in engraved or ornamented blocks or plates, in the mode or method of producing the same, and in the apparatus or mechanism employed therein, which apparatus is also applicable to other useful purposes. (*ornamenting jewellery.*) (*Communicated by Claus Van Haagen.*)	3366	24th Dec. 1870	John Henry Johnson.
Earrings - - - -	3405	31st Dec. 1870	Richard Angell Green.
JOINING, JOINTING, COUPLING; PIPE JOINTS, RAILWAY JOINTS, FURNITURE JOINTS AND HINGES; PACKING FOR JOINTS.			
Apparatus for hinging, adjusting and fastening gas retort lids, covers or doors, and other lids, covers and doors. (*joint pins or bolts.*)	3	1st Jan. 1870	Stephen Holman.
Improvements in harness for draught animals, and in connecting and disconnecting devices to be used therewith. (*Communicated by J. B. Crosby.*)	8	1st Jan. 1870	William Robert Lake.
Packing of pistons, glands, pipe and other joints -	47	6th Jan. 1870	George Dominicus Kittoe. Peter Brotherhood.
Construction of joints for uniting and securing the ends of railway rails.	55	6th Jan. 1870	Alfred Buckingham Ibbotson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
JOINING, &c.—*continued.*			
Improvements in rails, chairs and joints for the permanent way of railways, and in machinery for manufacturing such rails.	101	12th Jan. 1870	Alfred Buckingham Ibbotson. Johan Anderson Lindblad.
Improved apparatus for coupling railway carriages	152	18th Jan. 1870	James Mackenzie.
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion. (*duplex grab links for coupling chains.*)	175	20th Jan. 1870	James Maze Kilner.
Plant or apparatus used for dredging purposes (*connecting dredging receptacle by links to the bracket ladder.*)	181	20th Jan. 1870	William Simons. Andrew Brown.
Pipe joints	227	25th Jan. 1870	John Strain.
Elevators for raising and stacking straw, hay and other similar substances. (*jointing the main trough.*)	242	27th Jan. 1870	Stephen Lewin.
Mode of connecting traces to carriages	244	27th Jan. 1870	John William Currier.
Construction and application of hot-water boilers, joints and valves.	256	28th Jan. 1870	Alfred William George Weeks. George Deal. George Lillywhite. Alexander Oliver Launders.
Improvements in the manufacture of hinges and in apparatus used therein.	266	28th Jan. 1870	Charles Hayward Perman.
Manufacture of chairs and other seats (*jointed arrangement.*) (*Communicated by Wilhelm Walcker.*)	330	4th Feb. 1870	Thomas James Smith.
Subaqueous communications and apparatus for effecting the same.	403	11th Feb. 1870	John Imray.
Improvements in the manufacture or production of metallic pipes and sheets and in making joints therefor.	436	15th Feb. 1870	John Weems. William Weems.
Construction of caskets or boxes for jewels and other articles.) (*Communicated by Jules Mathieu.*)	437	15th Feb. 1870	Henry Bernoulli Barlow.
Improvements in the manufacture of gas and in obtaining residual products from such manufacture, and in apparatus to be used in such manufacture. (*connecting ends of condenser and heater pipes.*)	510	21st Feb. 1870	Frank Clarke Hills.
Apparatus for connecting and disconnecting railway carriages and trucks.	522	23rd Feb. 1870	William Crombleholme.
Ladders (*joining different lengths.*)	621	3rd March 1870	George Henry Ellis.
Couplings for railway carriages	622	3rd March 1870	James Broadley.
Improvements in the application of power for the propulsion of vehicles on common roads or railways and in apparatus connected therewith. (*tubular jointed connections.*) (*Communicated by Henri Adolphe Corbin.*)	664	5th March 1870	Alexander Melville Clark.
Construction of steam and hot-water boilers and coils in sections. (*joining by flexible joints.*)	695	9th March 1870	Thomas Seaville Truss.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
JOINING, &c.—*continued.*			
Improvements in the rolling stock of railways and tramways, also partly applicable to ordinary vehicles.	707	10th March 1870	John William Grover.
Machinery for holeing, cutting or excavating coal or other minerals (*connecting cutters to cutting wheels.*)	751	15th March 1870	Robert Winstanley, the younger. William Barker.
An improved buckle or fastening (*for uniting straps.*)	768	15th March 1870	John Beckett. Richard Levers.
Locomotive and other steam-boilers having fire-boxes. (*ring forming the joint round the fire door.*	801	18th March 1870	Stanhope Perkins.
Improvements in hale hoops and other bands, and in preparing, fitting, and securing the ends thereof. (*joining hoops.*)	911	29th March 1870	William McNabb.
Umbrellas and parasols (*jointing ribs, stretchers, &c.*)	931	30th March 1870	William Avery.
Construction of railways (*break joint arrangement.*)	949	31st March 1870	George Augustus Huddart.
Spring hinges	1060	11th April 1870	Robert Adams.
Reversible butt hinges (*Communicated by George Albert Lloyd and Joseph Wesley Stow.*)	1154	20th April 1870	William Robert Lake.
Improvements in or applicable to machines for spinning and doubling fibrous materials. (*hinging the guide wire board.*)	1182	23rd April 1870	George Bernhardt.
An improved gas and water-tight joint to pipes and tubes.	1342	11th May 1870	Jules Crouzières.
Construction and manufacture of school furniture and other similar articles. (*hinge or joint.*)	1400	16th May 1870	John Henry Banks.
Securing the nuts of the screw bolts used in fish-jointing the rails of railways.	1465	20th May 1870	William Barwell. George Bond Smith.
Screw propellers (*connecting the blades together.*) (*Communicated by Cornelis Johannes Wilton Van Reede.*)	1488	23rd May 1870	Alexander Browne.
Connections for fire-engine hoses and other pipes (*Partly communicated by Montgomery Gibs.*)	1508	24th May 1870	Loftus Perkins.
Improved self-adjusting couplers for connecting and disconnecting railway carriages, locomotives and other vehicles used on railways.	1598	2nd June 1870	Walker Vaughn Pulliam.
Couplings for railway carriages (*Communicated by Richard Campion and James W. Thomson, junior, and John H. Michener and Samuel L. Ward.*)	1599	2nd June 1870	William Robert Lake.
Manufacture of hinges	1607	3rd June 1870	Henry Timmins.
Hinges	1630	6th June 1870	William McLean.
Improvements in attaching or fixing the devices for effecting the water mark in paper to the covers of the dandy rolls and to the moulds used in the manufacture of paper, also in the construction of such dandy rolls, covers and moulds	1631	6th June 1870	Thomas Allen Marshall. Charles Dudley Marshall.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
JOINING, &c.—*continued.*			
An improved joint for water, gas and steam pipes (*Communicated by Henri Alexandre Roche.*)	1682	11th June 1870	Bristow Hunt.
Coal vases (*jointed lid.*)	1711	15th June 1870	Charles Hayward Perman.
Apparatus for communicating on railway trains	1762	21st June 1870	George Atterbury. George Whitehouse.
Fastenings or connections for securing the cables and standing rigging of ships and for other like purposes. (*Communicated by William Carlton Ireland.*)	1764	21st June 1870	William Robert Lake.
Reaping and mowing machines	1765	21st June 1870	Adam Carlisle Bamlett.
An internal spring coupling and brake for transmitting, stopping or regulating motion.	1777	22nd June 1870	Léandre Mégy. Joseph de Echeverria. Felix Bazan.
Apparatus for making Bessemer steel	1784	22nd June 1870	Alexander Lyman Holley.
Improvements in smelting iron and other ores and in the apparatus employed therefor. (*constructing pipe joints.*)	1790	23rd June 1870	Andrew Barclay.
Eliptical clip adjustments of door springs or hinges	1833	28th June 1870	Douglas Mole.
Improvements in steam generators and in furnaces therefor. (*Communicated by S. Lloyd Wiegand.*)	1856	30th June 1870	William Robert Lake.
Improved methods of connecting together the vertical and horizontal bars of iron hurdles, palisading and other kinds of fencing.	1901	5th July 1870	Thomas Hydes. William Wigfull.
Apparatus for cleaning the fluted and top rollers of machines used in preparing and spinning cotton and other fibrous substances. (*connecting the cleaning rollers.*)	1922	7th July 1870	Benjamin Dobson. Thomas Thornley. John Settle.
Mode of connecting wheels and other articles to their shafts and for coupling shafts.	1939	8th July 1870	William Randal Harris.
Combining or coupling locomotives and other railway rolling stock.	2077	23rd July 1870	Henry Dubs. Sampson George Goodall-Copestake.
Improved mechanism for locking or securely connecting the doors of safes, strong rooms and other like depositories to the frames thereof.	2132	29th July 1870	Henry Royall Minns.
Improved means or apparatus for protecting or shielding soldiers in battle. (*connecting the shields.*)	2192	6th Aug. 1870	Joseph Marsden.
Production of cast-iron pipes, columns, and other similar castings.	2242	12th Aug. 1870	William Oliver Johnston.
Improved couplings for railway carriages and vehicles.	2244	12th Aug. 1870	Peter Brimelow.
Improvements in reaping and mowing machines, parts of which improvements are also applicable to other purposes. (*connecting the connecting rods.*)	2329	24th Aug. 1870	William Goulding. Austin Hill.
Umbrellas, sunshades and weather protectors	2347	26th Aug. 1870	George Ritchie. Jessy Gertrude Ritchie.
Means and apparatus employed for exploding submarine mines or torpedoes.	2369	29th Aug. 1870	Andrew Noble.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
JOINING, &c.—*continued.*			
Mechanical telegraphs and liquid to be used therewith, which fluid is also applicable as a power transmitter for other purposes, for the making of liquid joints and other purposes where it is desirable to use a liquid that does not readily congeal or evaporate. - -	2384	1st Sept. 1870	Charles Henry Chadburn. William Chadburn.
Girders to be used in bridges, subways, viaducts, railway works and every description of building and other structures.	2393	2nd Sept. 1870	Constantine Henderson.
Improvements in pipe joints or couplings, applicable also to couplings for rods and shafting. (*Communicated by William Clare Allison.*)	2433	8th Sept. 1870	John Henry Johnson.
Improvements in the handles of sad irons or smoothing irons, stewpans, saucepans, frying pans and other articles of hollow ware, and in connecting the said handles to the said articles respectively. - - - - - -	2455	10th Sept. 1870	George Hardman. Samuel Simkins.
Connecting the ends of straps or belts - -	2495	16th Sept. 1870	Eli Howarth.
An improved type casting, breaking, rubbing and setting machine. (*making tight joints.*)	2527	20th Sept. 1870	John Alfred Thomas Overend.
Improvements in the construction of drain pipes and in the mode of obtaining access thereto for forming connections therewith or for cleansing or examining the same.	2570	26th Sept. 1870	Herbert John Jones.
Manufacture of sheet metal rollers or drums -	2585	29th Sept. 1870	James Hall. George Hall.
Machinery or apparatus for working and interlocking railway switches, tongues or moveable points and signals. - - - - -	2586	29th Sept. 1870	John Brunton. Richard Christopher Rapier.
Locomotive engines and tenders - - - (*forming connecting rods jointed.*)	2588	29th Sept. 1870	Robert Elsdon.
Machinery and apparatus for transporting passengers, goods and other articles. (*connecting the trucks.*) (*Communicated by Myles Cooper.*)	2624	3rd Oct. 1870	Leonard Cooper.
Stop valves - - - - - - (*forming a tight joint in the spindle.*)	2631	4th Oct. 1870	Joseph Alfred Rothwell.
Spring hinges - - - - - -	2640	5th Oct. 1870	Douglas Mole.
Improved apparatus and fuel for facilitating the soldering of the joints of electric telegraph and other wires.	2658	7th Oct. 1870	John William Fletcher.
New or improved constructions of elastic and flexible metallic or composite packings for the stuffing boxes and other working and jointing parts of steam engines and machinery.	2760	20th Oct. 1870	William Paton.
Construction of bridges - - - - - (*joint boxes.*) (*Communicated by Charles Shaler Smith, Charles Hazlehurst Latrobe and Frederick Henry Smith.*)	2765	20th Oct. 1870	John Henry Johnson.
A pole chain connector and disconnector for vehicles and harness and similar purposes.	2780	21st Oct. 1870	Daniel Whale.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
JOINING, &c.—*continued.*			
Manufacture of machines for mincing and cutting animal and vegetable substances. - - (*joints.*)	2807	25th Oct. 1870	Frederick William Follows. John Bate.
Improvements in the construction of metal gates, applicable also to tie rod couplings, hinges for shop-blind arms and other useful purposes.	2878	1st Nov. 1870	Stephen Tuddenham.
Ploughs - - - - - (*jointed beams.*)	2898	3rd Nov. 1870	James Howard. Thomas Phillips.
Improvements in pipes and in the means of connecting them together.	2915	4th Nov. 1870	John Somerville.
Improved mechanical arrangements for coupling and uncoupling railway locomotives, carriages, trucks and vehicles.	2945	8th Nov. 1870	James Broadley.
Machinery for raising and forcing fluids - -	2972	12th Nov. 1870	Richard Potter Pearn. Frank Kelsey Pearn.
Scissors, shears and other like cutting instruments	3004	16th Nov. 1870	John Carter.
Couplings for railway carriages - - - (*Communicated by Richard Campion, James W. Thomson, junr., John H. Michener and Samuel L. Ward.*)	3120	28th Nov. 1870	William Robert Lake.
Construction of sheet metal elbows or curved pieces for pipes or tubes. (*Communicated by Frederick Hoeltge.*)	3143	30th Nov. 1870	George Haseltine.
Umbrellas and parasols - - - (*stretcher joints.*)	3173	2nd Dec. 1870	James Edward Boyce. Robert Harrington.
Improved means for securing the joints of steam-boilers and tubes. - - - -	3206	6th Dec. 1870	James Howard. Edward Tenney Bousfield.
Apparatus for coupling and disconnecting railway carriages and trucks.	3311	19th Dec. 1870	Frederick Hawley.
Improvements in steam-generators and in furnaces therefor. (*connecting or coupling device.*) (*Communicated by S. Lloyd Wiegand.*)	3390	29th Dec. 1870	William Robert Lake.
KNIVES, FORKS, SPOONS, SCISSORS, SHEARS; CLEANING KNIVES, FORKS AND SPOONS; NUT-CRACKERS.			
Spoons - - - - - -	2	1st Jan. 1870	Gideon Goold.
An improved apparatus for sharpening knives and in a composition to be used therewith. (*Communicated by Zenas Colman Robbins and Henry Alfred Robbins.*)	87	11th Jan. 1870	William Robert Lake.
Rotary knife-cleaning and polishing machines -	100	12th Jan. 1870	George Kent.
Certain improvements in apparatus to be employed for sharpening scissors, knives or other similar edged tools. - - - -	155	19th Jan. 1870	William Henry Sleigh. John Richardson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
KNIVES, &c.—*continued.*			
An improvement in applying metal handles to table knives and forks. - - -	495	19th Feb. 1870	Matthew Henry Nicholson. George Booker.
Improved apparatus for heating knives for reaping and mowing machines in order to the partial hardening of such knives. - - -	502	21st Feb. 1870	Samuel Osborn. William Henry Fawcett.
Clips or shears for clipping or shearing horses and other animals, which are also applicable for other purposes. (*Communicated by Auguste Lengelée, Leon Boultier and Charles Vincent.*)	508	21st Feb. 1870	Thomas James Smith.
Improvements in combination tools, which improvements are also partly applicable to scissors, pliers and such like instruments. (*Communicated by Emile Granier.*)	520	22nd Feb. 1870	Alexander Melville Clark.
Improvements in friction lights and in apparatus to be employed therewith. (*cap which may be used as a knife.*)	755	15th March 1870	William Henry Samuel.
Knife-cleaning machines - - -	824	19th March 1870	George Weedon.
An improved combined carving fork and knife sharpener.	825	19th March 1870	George Kent.
Manufacture of table knives and forks, butchers' spear, dagger, bowie and other knives.	926	30th March 1870	Joel Lister.
Machinery for piercing and drilling tangs and scales for table knives and forks, table and butchers' steels and butchers' knives. - -	1309	7th May 1870	Joseph Nixon. Jabez Winterbottom.
Improved apparatus for cleaning knives - - (*Communicated by J. A. Weston.*)	1613	3rd June 1870	Alfred Vincent Newton.
A new description of knife steel for instantly imparting an uniform keen edge on table knives, butchers knives and large knives generally.	1978	13th July 1870	William Harle Horsfield.
Machinery or apparatus for reducing wood, metal or other hard material to fixed patterns. (*knife handles.*) (*Communicated by Frederick Baldwin.*)	1987	14th July 1870	Giovanni Sconcia.
An improved carving fork - - -	2080	23rd July 1870	Frederick James Baynes.
An improved table fork - - - (*fork and spoon.*)	2376	31st Aug. 1870	John Ingham.
Machinery and apparatus for breaking nuts and separating the husks and shells from the kernels.	2741	18th Oct. 1870	William Mather.
Certain improvements in hay knives - -	2768	20th Oct. 1870	Isaac Nash.
Construction of knife-cleaning machines - -	2815	26th Oct. 1870	Alexander Hawkins, the younger. Charles Pickering.
A new or improved instrument for cutting off the ends of boiled eggs. ("*mordova.*")	2870	1st Nov. 1870	William Hammant.
Scissors, shears and other like cutting instruments	3004	16th Nov. 1870	John Carter.
Cork cutting knives or apparatus, applicable also to cutting other substances than cork.	3010	17th Nov. 1870	Matthew Dodds.
Means or apparatus for cleansing and polishing forks and spoons.	3103	26th Nov. 1870	James Osborn Spong.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
KNIVES, &c.—*continued.*			
An improved form or construction of knife or cutter and in the modes of applying the same for the purpose of cutting, mowing, reaping or shearing, and such like purposes. - -	3283	15th Dec. 1870	Alexander Charles Brice. William Scantlebury.
Improvements in engraved or ornamented blocks or plates, in the mode or method of producing the same, and in the apparatus or mechanism employed therein, which apparatus is also applicable to other useful purposes. (*ornamenting plated ware.*) (*Communicated by Claus Van Haagen.*)	3366	24th Dec. 1870	John Henry Johnson.
Spades, shovels, forks and other like implements -	3400	30th Dec. 1870	David Yardley.
LAMPS, LANTERNS, CHANDELIERS, CANDLESTICKS; LAMP FURNITURE, GLASSES AND SHADES; LIGHTING; PRODUCING LIGHT.			
Portable stoves, lamps and lanterns - -	11	3rd Jan. 1870	Frederick Jones Duggan.
Improvements in lighting railway and other carriages, and in lamps to be used for this purpose.	19	3rd Jan. 1870	William Palmer, the younger.
Improvements in the preparation of combustible liquids for illuminating purposes, and in lamps for burning such or other combustible liquids. -	63	7th Jan. 1870	George Grainger Tandy. John Andrews Dryden. William Perkins.
Lamps - - - - -	76	10th Jan. 1870	Henry Mason Richardson.
Improved apparatus for decanting liquids - (*filling lamps.*)	217	24th Jan. 1870	Thomas Bentley.
Improvements in the manufacture of tablets, facias, signs and similar articles, and in the means of producing names, numerals, inscriptions and devices for ornament, advertisement, illumination and other similar purposes. -	223	25th Jan. 1870	Joseph Skertchly. Ambrose Maude Hurst.
Producing heat and light - - -	228	25th Jan. 1870	Cromwell Fleetwood Varley. Theodore Anthony Rochussen.
Apparatus for cooking, heating and lighting by gas	463	17th Feb. 1870	Sigismund Leoni.
Improvements in lamps for burning hydrocarbons, applicable for railway and other carriages.	471	17th Feb. 1870	Giovanni Battimelli.
Apparatus for lighting, applicable also for signalling purposes. (*Communicated by Auguste Prosper Berlioz.*)	474	17th Feb. 1870	John Henry Johnson.
Hand signal and other lamps - - -	483	18th Feb. 1870	Samuel Wilson Clark. William Robert Sykes.
Attaching lamps to carriages - - -	617	2nd March 1870	James Neale. Joseph Beverley Fenby.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
LAMPS, &c.—*continued.*			
Improved apparatus for using the lime light for theatrical representations and other purposes.	643	4th March 1870	Edward John Cowling Welch.
Construction of safety lamps used in mining, colliery and other underground operations.	645	4th March 1870	James Allison Hogg, the younger.
Means and utensils employed with apparatus used in cooking, combining arrangements for burning a light, forming a complete "kitchener."	658	5th March 1870	Ebenezer Stevens.
Ventilating lights - - -	818	19th March 1870	John Hockey.
An improved illuminated night clock - - (*Communicated by Victor Atanas Pierret and Fritz Borel.*)	987	4th April 1870	William Robert Lake.
Gas lamps - - - - -	1005	6th April 1870	Thomas Ford.
Manufacture of hackney carriage and other lamps, tablets and similar articles, for the purpose of exhibiting advertisements.	1057	11th April 1870	William Higgins.
An improved moderator lamp for burning petroleum and other mineral oils.	1179	22nd April 1870	Martin Marceus Silber.
Apparatus for absorbing the overflow of oil in hydrocarbon and other lamps. (*Communicated by Leon Eugene Cameron Moore and James Shockey Hamilton.*)	1215	27th April 1870	Christopher Wood.
Ships' and other signal lamps - -	1253	2nd May 1870	William Nunn.
Construction of hand signal lamps - -	1343	11th May 1870	James Howard.
Improvements in applying electricity or electro magnetism on board ships, in order to prevent incrustation or fouling of their bottoms and the deviation of their compasses, and to produce electric light.	1347	11th May 1870	Charles Weightman Harrison.
Apparatus for the production of gases for lighting and heating purposes. (*railway carriages.*) (*Communicated by Xavier Moussard.*)	1456	19th May 1870	Alexander Melville Clark.
Apparatus for lighting and heating purposes -	1467	20th May 1870	Albert Marcius Silber. Frederick White.
Mode of supplying lamps or lanterns with atmospheric air for supporting their illuminating flames. (*Communicated by John Henry Irwin.*)	1485	23rd May 1870	Martin Benson.
Certain improvements in vestibule lamps - -	1625	4th June 1870	Edmund Ratcliff.
Improvements in producing light from heavy hydrocarbons and in apparatus for that purpose. (*Communicated by Rufus Spaulding Merrill.*)	1660	8th June 1870	John Henry Johnson.
An improved process of drilling and cutting plane surfaces in the manufacture of crystal glass or metal ware, and an improved lathe for this purpose. (*globes.*) (*Communicated by Georges Blau.*)	1819	27th June 1870	William Edward Gedge.
Mast-head lights, lanterns or lamps - -	1868	1st July 1870	James Hosken.
Lamps - - - - - -	1906	6th July 1870	John Young.
An improvement in the means for producing electric light.	1917	7th July 1870	Eardley Louis Charles D'Ivernois.
Certain new and useful improvements in oil cabinets.	1954	9th July 1870	Moses Henry Wiley.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
LAMPS, &c.—*continued.*			
Process of and apparatus for carburetting gases or atmospheric air so as to render the same applicable for lighting, heating or producing motive-power. (*Communicated by Emile Charles Maillet.*)	1967	12th July 1870	Bristow Hunt.
An improved lamp for burning mineral oils and essences.	2015	16th July 1870	Pierre André Blondel.
Lamps - - - - - (*Communicated by Franklin Thomas Grimes.*)	2061	21st July 1870	William Edward Newton.
Means or apparatus for supplying mines and other places with lighting gas. - - -	2217	10th Aug. 1870	George Huntriss. John Swinburn. James Wilson.
Construction of miners' or safety lamps - -	2322	23rd Aug. 1870	James Allison Hogg.
Apparatus for lighting and heating purposes -	2331	24th Aug. 1870	Albert Marcius Silber.
Gas lamps and other lamps - - -	2344	26th Aug. 1870	Frederick Gray.
Improved means of and apparatus for lighting gas lamps.	2361	29th Aug. 1870	Edmund Chiverton.
Attaching lamps to carriages - - -	2405	3rd Sept. 1870	James Neale. Joseph Beverley Fenby.
An improved apparatus for lighting with legroine gas (petroleum spirit).	2451	10th Sept. 1870	Arcadi Stolipine.
Apparatus for suspending pictures and other articles. (*suspending lamps.*)	2499	16th Sept. 1870	James Atkins.
Improvements in lamps and in the construction of lenses and reflectors. - - - -	2529	20th Sept. 1870	James Couper, the younger. William Haden Richardson.
Manufacture of fountain lamps - -	2799	24th Oct. 1870	William Firth. John Eshelby.
Means or apparatus for producing the more complete combustion of gas, paraffin and other hydrocarbon oils. (*Communicated by Henry Harrison Doty.*)	2865	31st Oct. 1870	Alexander Horace Brandon.
Apparatus for lighting - - -	2872	1st Nov. 1870	Albert Marcius Silber. Frederick White.
Lamps especially applicable to railway lamps -	2963	10th Nov. 1870	Albert Marcius Silber. Frederick White.
Production of ornamental work in glass combined or not with metals, porcelain and other like substances. - - - - (*brackets, knobs, bosses, &c. for gasaliers, chandeliers, lustres, pendants, &c.*	2970	11th Nov. 1870	Stephen Tuddenham. Alexander Robert Eyre.
Lamps for the roofs of railway carriages and other purposes.	2982	14th Nov. 1870	William Thomas Tongue.
Hydro-carbon lighting apparatus, chiefly designed for locomotives and signals. (*Communicated by Myron Hopkins Strong, Thomas Barbour, Charles Cunningham Connor and Robert Barbour.*)	3061	23rd Nov. 1870	William Robert Lake.
Railway carriage lamps and other lamps - -	3082	24th Nov. 1870	Eli Henry Griffiths.
Miners' safety lamps - - - -	3106	26th Nov. 1870	Richard Brown.
Lamps - - - - - (*for carriages, railways, miners, &c.*)	3209	6th Dec. 1870	Patrick Adie. William Simpson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
LAMPS, &c.—*continued.*			
Lamps	3254	12th Dec. 1870	William Denny Ruck.
Improvements in lamps, especially applicable to railway and street lamps.	3318	19th Dec. 1870	Albert Marcius Silber. Frederick White.
Apparatus for lighting and heating purposes	3325	20th Dec. 1870	Albert Marcius Silber.
Candlesticks and lamps	3380	27th Dec. 1870	George Bell.
For lamp burners, *see* "GAS-BURNERS."			
LEATHER, SKINS AND HIDES; ARTIFICIAL LEATHER AND PARCHMENT; CURRYING, TANNING, CUTTING AND ORNAMENTING LEATHER.			
Improvements in ornamenting woven and felted fabrics, and in apparatus employed therein. (*and leather or skins.*)	210	22nd Jan. 1870	John William Eyres. John Longbottom.
An improved machine to be used in currying leather. (*Communicated by Césaire Renard.*)	265	28th Jan. 1870	Alexander Melville Clark.
An improved mode of cutting leather for the soles and heels of boots and shoes.	329	4th Feb. 1870	John Willis. James Southall.
An improved crushing and disintegrating machine or mill. (*grinding bark for tanneries.*)	377	9th Feb. 1870	Ralph Peacock. Edward Wilson.
Machinery or apparatus to be used in currying leather. (*Communicated by Jules Landron.*)	396	10th Feb. 1870	William Edward Gedge.
Manufacture of vegetable parchment or parchment paper. (*Communicated by Colin Campbell.*)	459	16th Feb. 1870	William Robert Lake.
Improvements in the manufacture of pressed leather, and in machinery employed for this purpose.	543	24th Feb. 1870	Alfred Dickson. Thomas Law.
Treatment of certain fibrous substances to be used in the manufacture of paper pulp for paper and for conversion into textile fabrics. (*or into vegetable parchment.*)	587	28th Feb. 1870	Charles Duff.
Preparing, treating and purifying fibrous vegetable and fibrous animal substances. (*skins.*)	588	28th Feb. 1870	Thomas Cattell.
Tanning (*Communicated by Louis André Beaudet.*)	716	10th March 1870	Michael Henry.
Manufacture of artificial leather (*Communicated by Soren Sörensen.*)	728	11th March 1870	Peter Christian Thamsen.
Crimping machines (*for crimping leather.*) (*Communicated by Samuel W. Jamison.*)	806	18th March 1870	John Henry Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
LEATHER, &c.—*continued.*			
Machinery for scouring and shaving hides, skins or leather.	823	19th March 1870	James Staniland Stocks. Benjamin Stocks. Samuel Hutchinson.
Improvements in the treatment of hides and skins in tanning and otherwise utilizing all portions or pieces thereof, and in the treatment of goods already tanned.	863	24th March 1870	Henry Richardson Fanshawe. William Henry Smith.
Ornamenting wood, leather and other materials for the manufacture of fancy boxes, furniture, panellings, and for other ornamental purposes.	1058	11th April 1870	Archibald Brown.
Machinery for cutting heel and sole pieces or other forms of leather.	1166	21st April 1870	James Thomas Sheppard.
An improved process for cleaning wool or hair (*and cleaning hides.*) (*Communicated by Charles F. A. Simonin and Edward W. Coffin.*)	1219	27th April 1870	William Robert Lake.
Improvements in textile fabrics for book covers and in weaving the same. (*producing imitation leather.*)	1260	3rd May 1870	Alfred Barlow. Henry Browne.
Machinery for scouring, glossing and otherwise treating leather. (*Communicated by Edward Fitzhenry.*)	1490	23rd May 1870	William Robert Lake.
Improved means and apparatus for dressing or finishing leather.	1600	2nd June 1870	John Priestman. Thomas Priestman.
Manufacture of leather for mill bands (*Communicated by Henry Klemm and Charles Klemm.*)	1662	8th June 1870	Edward Moss.
Improvements in walking-sticks and in sticks or handles for umbrellas, parasols and sunshades, and in certain other portable articles mainly composed of wood or cane. (*using leather.*)	1736	17th June 1870	Charles August Bluemel.
Improvements in treating and distilling petroleum and in apparatus employed therein. (*oil for dressing leather.*) (*Communicated by James Laws Heverin and James Lloyd Bewley.*)	1823	27th June 1870	Robert Kell.
Improvements in packings and in bearing surfaces, and in the preparation or treatment of materials composing the same. (*treating leather for packings.*) (*Communicated by Eliza Dexter Murfey.*)	1997	14th July 1870	John Henry Johnson.
Improved machinery or apparatus for tawing or dressing skins. (*Communicated by Joseph Berendorf.*)	2073	22nd July 1870	William Edward Newton.
Manufacture of vegetable parchment or parchment paper. (*Communicated by Colin Campbell.*)	2100	26th July 1870	William Robert Lake.
Manufacture of leather for picking bands, lathes and other articles requiring leather of an extraordinary toughness, durability and strength. (*Communicated by Messieurs Klemm, Brothers.*)	2210	9th Aug. 1870	Edward Moss.
Water-pressure machinery to be used in the manufacture of hats and other articles. (*leather articles.*)	2261	15th Aug. 1870	Edward Colston Williams.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
LEATHER, &c.—*continued.*			
Improvements in the treatment of certain fibrous substances to be used in the manufacture of paper pulp for paper and for conversion into textile fabrics. (*and for parchment or vellum.*)	2351	27th Aug. 1870	Charles Duff.
Manufacture of artificial leather - -	2519	19th Sept. 1870	Frederick John Bugg.
Machinery for skiving and cutting leather for the manufacture of boots and shoes. - - (*Communicated by Champion Brown and William Childs.*)	2533	21st Sept. 1870	William John Barron. Edmund Charles Barron.
Improvements in the manufacture of pressed leather and in apparatus for cutting leather into various forms.	2697	12th Oct. 1870	Frederick John Bugg.
Manufacture of leather from the refuse of tanned and untanned hides and skins in combination with woollen, hemp, flax and other fibrous materials.	2719	14th Oct. 1870	John Harcourt Brown.
Manufacture of leather paper - - -	2720	14th Oct. 1870	John Harcourt Brown.
An improved mode of colouring india rubber and other like waterproof fabrics or materials. (*leather cloth.*)	2761	20th Oct. 1870	Alfred Ford.
Manufacture of oil and other products of petroleum. (*stuffing for currying leather.*) (*Communicated by Charles Toppan.*)	2762	20th Oct. 1870	William Robert Lake.
Improvements in apparatus and in the manufacture of leather laces and strips.	2883	2nd Nov. 1870	Thomas Saunderson.
An improved method of imparting elasticity to leather, skins, cotton, cloth and other similar or like articles.	2911	4th Nov. 1870	John Griffits.
Machinery for scouring, glossing or otherwise treating leather. (*Communicated by Edward Fitzhenry.*)	3037	19th Nov. 1870	William Robert Lake.
A combination of instrumentalities for imparting horizontal reciprocating movements to a pendulous rod or snspensory. (*leather dressing machines.*)	3090	24th Nov. 1870	Patrick Lennox.
Manufacture of pressed leather - -	3196	5th Dec. 1870	Frederick John Bugg.
"Jiggers or dummy" machines used in the manufacture of leather, artificial or otherwise. -	3212	7th Dec. 1870	Edward Kitchin. Matthew Kitchin.
Improved means and apparatus for utilizing small pices of leather in the manufacture of boots and shoes.	3235	9th Dec. 1870	John Blakey.
An improved form or construction of knife or cutter, and in the modes of applying the same, for the purpose of cutting, mowing, reaping or shearing and such like purposes. (*shearing wool from skins.*)	3283	15th Dec. 1870	Alexander Charles Brice. William Scantlebury.
Improvements in machinery for cutting artificial and other leather, particularly applicable for utilising waste pieces.	3299	17th Dec. 1870	Joseph Hall.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
LOCKS, LATCHES, BOLTS, LOCK FURNITURE; KEYS, SAFES, STRONG BOXES.			
Knobs and spindles for door locks and similar fastenings.	139	17th Jan. 1870	Alfred Beale Rocke.
Apparatus for adjusting and securing the knobs or handles of locks, latches and other fastenings. -	141	17th Jan. 1870	Thomas Peard. James John Castle. Isaac Holmes.
Safes and strong rooms - - - -	162	19th Jan. 1870	William Mawe.
Locks - - - - - - - - (*barrel locks.*)	187	21st Jan. 1870	Frederick Whitfield.
An improved bolt or fastening applicable to doors and windows and other similar purposes.	428	14th Feb. 1870	Edward Wyburd Furrell.
Receptacles intended to be used as a protection from fire.	694	9th March 1870	James Duffey.
Improvements in the manufacture of bars, plates and sheets of steel, or steel and iron combined, and in the process of welding employed in such manufacture. (*for making safes.*) (*Communicated by John Absterdam.*)	856	23rd March 1870	William Robert Lake.
Improvements in locks, latches or bolts for fastening the doors of railway carriages, which improvements are also applicable to other purposes.	877	25th March 1870	William Rogers Thomson.
Improved means for fastening and securing the doors of railway carriages and other doors.	879	25th March 1870	Robert Frederick Muller Harcourt.
Apparatus for locking and unlocking gates on railways.	903	28th March 1870	Silas Paul Baker.
Certain improvements in door locks and latches - (*Communicated by Edward Buss.*)	1130	19th April 1870	Henry Bernoulli Barlow.
Construction of locks and keys - - -	1242	30th April 1870	Charles Massi.
Safes, chests, bank vaults and other like structures (*Communicated by Theodore Hyatt.*)	1289	5th May 1870	John Henry Johnson.
Hinges - - - - - - - (*for safe doors.*)	1630	6th June 1870	William Mc Lean.
Treatment of slag and other vitreous material - (*for filling fire-proof safes.*) (*Communicated by Henry Baldwin, jun.*)	1644	7th June 1870	George Tomlinson Bousfield.
Improved means of protecting shop fronts, windows, doors and other parts of buildings or structures. (*safes and strong rooms.*)	1648	7th June 1870	Frederick Schäfer.
Combination locks and padlocks and keys for the same. (*Communicated by Ernest Baudot and Oscar de Négrier and Isidore Farinaux and Edward Roettger.*)	1927	7th July 1870	Hunter Henry Murdoch.
Improving latches, locks, bolts, fastenings in general, but more especially the fastenings of doors, and particularly the fastenings of railway carriage doors.	1986	14th July 1870	James William Ayres.
An improved fire-proof composition for safes and other depositories. - - - -	1992	14th July 1870	Charles John Curtis. Augustin Fiddes.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
LOCKS, &c.—*continued.*			
Mechanism arranged in combination with the locks of boxes, dressing and other cases, desks, drawers, cupboards or other similar receptacles to facilitate the opening thereof.	2037	20th July 1870	John Dyus. George John Parry.
Door fastenings	2054	20th July 1870	David Jones.
Improved mechanism for locking or securely connecting the doors of safes, strong rooms and other like depositories to the frames thereof.	2132	29th July 1870	Henry Royall Minns.
Improvements in turn-buckles, and in securing door knobs or handles and turn-buckles to their spindles.	2146	1st Aug. 1870	Francis James Barnby.
Locks	2152	2nd Aug. 1870	John Edwards.
Window sash and casement fasteners	2215	9th Aug. 1870	John Banks.
Locks for railway and other carriages	2249	12th Aug. 1870	John Matthias Hart.
Certain improvements in fastenings for doors	2251	12th Aug. 1870	Philip Waters.
Improvements in lifting latch-bolts and latches, and in staples for the same.	2440	9th Sept. 1870	James Tildesley.
Improvements in or applicable to the knobs or handles of locks and latches.	2442	9th Sept. 1870	Joseph Kellett.
An improved standing bench for boot and shoemakers, locksmiths and other artizans.	2475	14th Sept. 1870	John Henry Glew. Samuel Henry Lewis.
Improvements on electro-dynamic apparatus for keeping off thieves. (*safety lock and key.*)	2645	6th Oct. 1870	Dr. Otto Burg. Auguste Schiebel.
Safes, strong rooms and apparatus for the protection of valuable property.	2654	6th Oct. 1870	Samuel Chatwood. Thomas William Tobin.
Improved locks or fasteners for doors, gates, boxes and other similar purposes.	2785	22nd Oct. 1870	Abel Edgar Samels.
Improvements applicable to safes, vaults and other structures for containing valuable property, and in alarm apparatus or telegraphs connected therewith. (*Communicated by Edwin Holmes and Henry Clay Roome.*)	2876	1st Nov. 1870	William Edward Newton.
Combination locks and padlocks and keys for the same. (*Communicated by Ernest Baudot and Oscar de Négrier and Isidore Farinaux and Edward Roettger.*)	3108	26th Nov. 1870	Hunter Henry Murdoch.
An improved construction of combination locks and latches. (*Communicated by Theodore Kromer.*)	3114	28th Nov. 1870	Charles Denton Abel.
An improved construction of locks and latches (*Communicated by Theodore Kromer.*)	3115	28th Nov. 1870	Charles Denton Abel.
Wardrobe and such like latches and parts connected therewith.	3277	14th Dec. 1870	George Bilbrough.
Improvements in locks and fastenings, especially applicable for railway carriage and other doors.	3356	22nd Dec. 1870	James Morrison.
An improved construction of fastening for doors	3403	31st Dec. 1870	James William Ayres.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
LOOKING-GLASSES AND FRAMES.			
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation and preserving wood and other materials. (*used on the silvering of mirrors.*)	986	4th April 1870	Achille Thomas Anquetil.
An improvement in hand mirrors and other like articles.	1556	27th May 1870	William Samuel Moore.
Toilet and other mirrors - - - - (*Communicated by George Hostell Chinnock Edward Payson Williams.*)	2051	20th July 1870	William Edward Newton.
Construction of illuminating and ventilating roofs and gratings or plates, parts of which are applicable to ordinary footways and carriage ways. (*silvering edges of the glass.*) (*Communicated by Theodore Hyatt.*)	2755	20th Oct. 1870	John Henry Johnson.
MANGLING, IRONING, GOFFERING, ROUCHING.			
Apparatus for washing, wringing and mangling -	521	23rd Feb. 1870	George Henry Ellis.
Sad irons and other smoothing irons - -	661	5th March 1870	Joseph Hipkiss. Samuel Whitehouse.
Apparatus for plaiting and sewing linen and other fabrics for shirt fronts or other similar purposes.	732	12th March 1870	William Pennington.
Crimping machines - - - - (*Communicated by Samuel W. Jamison.*)	806	18th March 1870	John Henry Johnson.
Manufacture of crape - - - - (*crimping.*)	864	24th March 1870	Robert Henry Kay. Alfred Thomas Richardson.
An improved combined washing machine and ironing table.	909	28th March 1870	Otis Henry Weed.
An improved pressing machine for the use of tailors and others. - - - - - (*for smoothing or ironing clothes.*)	970	2nd April 1870	Israel Summersfield. John Glasgow Sanderson.
Smoothing irons - - - - (*Communicated by Théophile Klaus, Johannes Reuger and Georges Rüger.*)	1918	7th July 1870	Alexander Melville Clark.
Machinery or apparatus for goffering and fulling or wrinkling textile fabrics.	2287	18th Aug. 1870	Edwin John Grabham.
Improved manufacture of trimmings, edgings, ruchings, plaiting and other similar goods.	2300	20th Aug. 1870	Hesketh Hughes.
An improved apparatus for ironing and goffering fabrics. - - - - - - (*Communicated by Dr. S. C. Smith.*)	2449	10th Sept. 1870	Frederick Mills. Thomas Albert Scholfield.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MANGLING, &c.—*continued.*			
Improvements in the handles of sad irons or smoothing irons, stew pans, saucepans, frying pans and other articles of hollow ware, and in connecting the said handles to the said articles respectively. - - - - - -	2455	10th Sept. 1870	George Hurdman. Samuel Simkins.
An improved iron for ironing to be used for laundry, domestic, manufacturing and general purposes.	2530	21st Sept. 1870	John Raywood.
Construction of bowls or rollers used in calendering and other pressing or squeezing machinery. (*in mangles.*)	2827	27th Oct. 1870	Robert Brewitt.
Mechanism or apparatus to be employed for wringing and mangling woven fabrics. - -	3146	1st Dec. 1870	Silas Schofield. Alfred Schofield.
Flat irons employed in the pressing and smoothing of linen and apparel.	3189	5th Dec. 1870	Walter Edmund Yates.
MANURE; TREATING SEWAGE.			
Manufacture of artificial manures - - -	21	3rd Jan. 1870	David Forbes.
Treatment of night soil, sewage, urinous superphosphates, gas, lime refuse and other refuse matters, for the purpose of deodorizing, of obtaining manure, and of diluting acids with urinous mixtures.	67	8th Jan. 1870	William Henry Hughan.
Improvements in obtaining oil from carbonaceous substances, in utilising the bye-products and residues, and in making manure and moulders' blackening.	108	13th Jan. 1870	James Greenshields.
Manufacture of artificial manure - - -	142	17th Jan. 1870	John Richardson.
Treatment of certain substances for manure -	163	19th Jan. 1870	James Dewar.
Improvements in the production of manure and fuel from sewage or excremental or fecal matter, and in apparatus for such purpose. - -	239	26th Jan. 1870	Maxwell Anketell. Oliver Frederick Anketell.
Treatment of certain substances for food and for manure.	260	28th Jan. 1870	James Dewar.
Mode of and apparatus for treating and purifying sewage.	364	8th Feb. 1870	George William Wigner.
Improvements in treating and filtering sewage and in apparatus to be employed for these purposes.	506	21st Feb. 1870	John Leopard.
A method of producing an improved black pigment, and obtaining phosphates and other substances from the waste portions of the hop plant. (*Communicated by Frederic Rotter.*)	515	22nd Feb. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MANURE, &c.—*continued.*			
A new method or methods for extracting and purifying mill waste, refuse flock material, and removing dyed colours and re-dying the same into other colours for re-manufacture, for using certain agents employed in the process, and thereby making a manure.	530	23rd Feb. 1870	George Rydill.
An improved process for converting human excrement into fuel and manure. - - -	580	26th Feb. 1870	Alexander Bobrownicki. Alfred Didier Marie Mesnard. Viscounte de Chousy.
Improvements in the treatment of sewage and in the production of manures. - - -	607	2nd March 1870	David Forbes. Astley Paston Price.
Apparatus applicable to the treatment of towns' and domestic refuse for sanitary purposes.	630	3rd March 1870	James Conyers Morrell.
Improvements in or applicable to centrifugal drying machines or hydro-extractors, (*for drying sewage deposit.*)	679	8th March 1870	George William Wigner.
Effecting the decolorisation, deodorisation and purification of foul and waste waters of sewage and of supernatant sewage water.	713	10th March 1870	John James Lundy.
Certain improvements in machinery or appliances for reducing bones, hoofs, horns, and other like animal matter to small particles. - - (*for manure.*)	723	11th March 1870	George Atkin. Edwin Atkin. Alfred Amos Atkin.
Preparation of ammoniated sulphuric acid for the manufacture of manure. (*Communicated by Charles U. Shepard, junior.*)	872	24th March 1870	William Robert Lake.
Preparation of soluble phosphates of lime - (*Communicated by Ernest Deligny.*)	943	31st March 1870	John Henry Johnson.
Treating excremental matters - - - (*Communicated by Cyprien Marie Tessie du Motay.*)	1061	11th April 1870	Thomas James Smith.
Improvements in the treatment of sewage and in the production of manures. - - -	1137	19th April 1870	David Forbes. Astley Paston Price.
Treating human excrement - - -	1200	26th April 1870	Ludwig Schad.
Apparatus for receiving and treating sewage and other noxious matters.	1311	7th May 1870	Robert Weare.
Improvements in the treatment of sewage and in the production of manures.	1314	7th May 1870	Astley Paston Price.
Improvements in deodorising and purifying sewage and in making manure therefrom.	1354	12th May 1870	George William Wigner.
Improvements in the manufacture of alum and in obtaining by-products in such manufactures, applicable to certain useful purposes. (*manures or fertilisers.*)	1676	9th June 1870	Peter Spence.
An improved apparatus for mixing soils, chymical manures and other substances, either separately or together, and for mixing dry with semi-fluid substances, liquids or air. (*Communicated by Frederick Tolhausen.*)	1701	14th June 1870	Henry Hammond.
Treatment of manure - - - -	1706	14th June 1870	Bevan George Sloper.
Improvements in the treatment and in the employment of certain animal substances to be used as fertilising agents. (*Communicated by Dirk Adreaan Ter Hoeven.*)	1716	15th June 1870	John Henry Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MANURE, &c.—*continued.*			
Production of compounds capable of being employed as manures. - - - -	1789	23rd June 1870	David Forbes. Astley Paston Price.
Improvements in evaporating and boiling or concentrating liquids, and in apparatus employed therein. (*urine.*) (*Communicated by Jean Francois Cail.*)	1900	5th July 1870	John Henry Johnson.
Improvements in the treatment of sewage, and in obtaining manures or fertilizing substances therefrom.	1949	9th July 1870	Peter Spence.
Treatment of sewage or other liquids or solutions, and the production therefrom of manurance precipitates or other solids, as also for raising sewage or other liquids or matters by floating tanks or by the action of tidal waters.	2032	10th July 1870	Henry Malcolm Ramsay.
Improvements in utilizing and deodorizing sewage matters of dwelling houses and other places, and in apparatus to be used in connection with the same.	2047	20th July 1870	John Hughes Lloyd.
Improvements in treating sewage and in manufacturing manure.	2048	20th July 1870	Charles Bartholomew.
Purifying, deodorizing and utilizing sewage and other refuse and deleterious matters, and for machinery therein employed.	2297	20th Aug. 1870	Joseph Judge Hays.
Manufacture of superphosphate of lime - -	2303	20th Aug. 1870	Campbell Morfit.
Manufacture of manure - - - -	2425	7th Sept. 1870	Campbell Morfit.
Means employed for the purification of water - (*sewage water.*)	2516	19th Sept. 1870	Gustav Bischof, junior.
Deodorization and utilization of sewage or other feculent or putrescent matter whether in a solid, fluid or semifluid state. - - -	2534	21st Sept. 1870	Ferrar Fenton. Samuel Hollins.
Improvements in treating sewage, and in the apparatus and means employed therein.	2653	6th Oct. 1870	Charles Felton Kirkman.
Process of revivifying the materials used for the purification of gas. - - - - (*refuse used in making manure.*)	2664	7th Oct 1870	Andrew McNeil. William Wheaton.
Apparatus for purifying sewage - - -	2832	27th Oct. 1870	William Frost Sweetland. John Merfield.
Treating and deodorizing sewage - - -	2838	28th Oct. 1870	Joseph Judge Hays.
Preparation of manures from tribasic phosphates -	2864	31st Oct. 1870	John Berger Spence.
Manufacture of manure from blood and offal of animals.	2979	12th Nov. 1870	Richard Fry.
Improvements in deodorizing and treating sewage and in apparatus to be employed for this purpose.	3107	26th Nov. 1870	Amos Bryant. Samuel Hall Culley.
Improvements in the manufacture of deodorizing and disinfecting compounds, and in the treatment of sewage and impure waters, and in closets and apparatus for the treatment of sewage.	3167	2nd Dec. 1870	Fritz Hillè.
Treatment of sewage and the preparation of materials to be used for its purification.	3169	2nd Dec. 1870	Henry Young Darracott Scott.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MANURE, &c.—*continued.*			
An improved apparatus for mixing soils, chemical manures and other substances either separately or together, and for mixing dry with semi-fluid substances, liquids or air. (*Communicated by Frederick Tolhausen.*)	3213	7th Dec. 1870	Henry Hammond.
Apparatus for treating sewage matter and for filtering sewage and other water.	3269	14th Dec. 1870	Frederick Ludewig Hahn Danchell.
Improvements in heating, drying and evaporating, and in apparatus to be used therein. - - (*drying sewage deposit.*)	3364	24th Dec. 1870	Christopher Rawson. Philip Ovenden. William McCree.
The utilization of waste materials used in the manufacture of earthenware in the manufacture of artificial manure.	3368	24th Dec. 1870	William Holdcroft.
Improvements in deodorising and purifying sewage, urine and refuse matters and liquids, and in making manure therefrom and in apparatus for those purposes. - - - -	3399	30th Dec. 1870	Christopher Rawson. Philip Ovenden. James Wylde. William Mc Cree. Henry Hill.
MAPS AND CHARTS.			
Rack pulleys for the cords of window blinds, maps and other articles.	1266	3rd May 1870	Samuel Taylor.
Improvements in parlour foot balls and other india rubber articles, which improvements relate partly to illustrating the surfaces of such articles and partly to inflating the same. (*may be used as a globe.*)	1505	24th May 1870	Thomas Jefferson Mayall.
Imparting to globes by means of clockwork the various phenomena and phases of the earth.	2213	9th Aug. 1870	Louis Jérome Napoléon Mouret.
Apparatus for suspending pictures and other articles. (*suspending maps.*)	2499	16th Sept. 1870	James Atkins.
MATCHES, FUSES, PIPE AND CIGAR LIGHTS.			
Machinery for cutting splints for matches and other purposes.	138	17th Jan. 1870	George Baker.
Improvements in friction lights and in apparatus to be employed therewith.	755	15th March 1870	William Henry Samuel.
Improvements in the manufacture of boxes and cases, and in the modes or means of ornamenting and rendering the same wet-resisting or damp-proof. (*match boxes.*)	813	18th March 1870	William Austin.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MATCHES, &c.—*continued.*			
An improved fuze - - - -	1356	12th May 1870	John Frank Rogers.
Cases or receptacles for needles, pins, matches, pens, cards, stamps, photographs, cotton, and other similar articles.	1473	21st May 1870	William Avery.
An improved case holder or receptacle for matches, and a mode of manufacturing such case holder or receptacle. (*Communicated by Eugene Haussmann.*)	1493	23rd May 1870	Michael Henry.
Compounds for insulating telegraph wires, the manufacture of flexible tubing and other like purposes. (*coating fuzes.*)	1626	4th June 1870	Daniel Spill.
An improved coating for safety fuzes used in mining	1735	17th June 1870	William Bickford Smith.
Apparatus for cutting wood into small strips, filaments or shavings.	1828	27th June 1870	William Riddell.
Manufacture of friction lights - - -	1865	1st July 1870	John Hynam. James Dixon.
Explosive projectiles and fuses - - - (*Communicated by Eugene Pertuiset.*)	2066	21st July 1870	John Henry Johnson.
Improved machinery or apparatus for separating matches so that they can be dipped in the phospheric paste without adhering to one another.	2089	25th July 1870	Ottmar Walch.
A novel application of stereoscopic views to match boxes and other boxes or cases.	2408	3rd Sept. 1870	Hippolyte Fontaine.
Fuzes - - - - - -	2424	7th Sept. 1870	Andrew Noble.
An improved means of advertising - - (*in match boxes,*) (*Communicated by Henry Gustave Adrien Pécoul.*)	2908	3rd Nov. 1870	Alexander Melville Clark.
Improvements in holders for continuous matches and in binding materials for making continuous and other matches. - - - -	3246	10th Dec. 1870	William Perkins. George Grainger Tandy.
Match and fusee boxes - - -	3374	24th Dec. 1870	Louis Petre. Charles Petre.
MEASURING AND GAUGING LENGTH, SIZE AND QUANTITY; LOOM AND OTHER MACHINE REGISTERS AND COUNTERS; CHECKS FOR CASH AND TIME TAKING, CALENDARS.			
An improved self-gauging and registering indicator for ascertaining the hourly, daily or periodical consumption of liquids of any kind.	68	8th Jan. 1870	Henry William Lowden.
Double faced watches - - - - (*and (showing days, months and dates.*)	123	15th Jan. 1870	Alfred Courvoisier Jonas.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MEASURING LENGTH, &c.—*continued.*			
Apparatus for recording the number of passengers who travel in omnibuses or other vehicles, together with the value of the fares paid by such passengers, applicable to other purposes.	131	15th Feb. 1870	Edward James Jeffs.
An improved apparatus for self-registering and checking the money taken for admissions to public entertainments and other places where a check on money-taking is desirable.	178	20th Jan. 1870	Charles Alexander Calvert.
Looms for weaving textile fabrics - - (*measuring apparatus.*)	224	25th Jan. 1870	William Hunter.
An improved machine or apparatus for effecting calculations, applicable to weights, measures, time and money.	323	4th Feb. 1870	John Sellers.
An improved combination implement, consisting chiefly of a hammer, screwdriver, nail-puller and rule.	434	14th Feb. 1870	Frank Theophilus Ferguson.
A new or improved system of registering or indicating apparatus for mining and other purposes.	457	16th Feb. 1870	Edmond Louis Ruelens.
Warping or beaming and sizing machines - (*use of conducting roller as a measuring roller.*)	555	25th Feb. 1870	John Bullough.
Apparatus for checking the receipts by money takers, and for recording the number and class of admissions.	586	28th Feb. 1870	Robert Twiss Sutton.
An improved micrometric steelyard - - (*for numbering threads.*) (*Communicated by Louis Jean Baptiste Saladin.*)	839	21st March 1870	William Robert Lake.
An apparatus for measuring card filleting whilst in the process of making.	866	24th March 1870	Samuel Bateman.
Means of and apparatus for indicating or registering goods raised or lowered in breweries, granaries, warehouses and other buildings. - -	871	24th March 1870	Louis Watson. Julius Hall.
A new or improved apparatus for registering or indicating figures or numbers, applicable to seats of chairs, weighing machines and other useful purposes. (*cab fare indicator.*)	950	31st March 1870	Joseph Bailey.
Improvements in meters for measuring fluids and in packings and counting apparatus to be used therewith, parts of which improvements are applicable to other purposes. (*measuring revolutions of machinery and tell-tales.*)	965	2nd April 1870	Henry Law.
Certain improvements in apparatus used for scoring or recording numbers.	1129	18th April 1870	George Colleton Cooke.
Machinery for knitting stockings or various other articles. (*index dial.*) (*Partly communicated by George M. Patten.*)	1171	22nd April 1870	James Rand Clark.
An improvement in wrappers for papering needles, and a new or improved instrument or apparatus for measuring or counting needles for papering.	1178	22nd April 1870	Victor Milward.
Counting machines - - - - (*Communicated by Axel Petersson.*)	1246	30th April 1870	Cathrinus Nicolay Arbo Collett.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MEASURING LENGTH, &c.—*continued.*			
Improvements in meters for measuring fluids and in packings and counting apparatus to be used therewith, parts of which improvements are applicable to engines for obtaining motive power from fluids under pressure and to other purposes. (*registering revolutions of machinery.*)	1363	13th May 1870	Henry Law.
Improvements in motive-power, and in machinery, apparatus or appliances to be used in connection therewith. (*measuring air and gas for mixing.*)	1537	27th May 1870	William Astrop.
Means of checking and indicating the number of passengers carried by an omnibus or other similar public conveyance. (*checking the receipts.*)	1674	9th June 1870	Charles Alexander Calvert.
A new or improved self-acting indicator or machine for showing the times of trains to arrive at and depart from railway stations, points and crossings, for the better prevention of accidents, applicable also for other purposes. - -	1739	17th June 1870	William Ambler. Benjamin Jowett.
An improved automatic machine for weighing and registering grain and other substances. -	1787	23rd June 1870	Henry Pooley. Thomas Roberts.
Apparatus for indicating or marking games -	1894	4th July 1870	Frederick Pulman.
A new or improved apparatus for counting paper in sheets and in the application thereof to printing machines.	1958	11th July 1870	Percy David Hedderwick.
Means or apparatus for indicating or recording and registering the times of arrival or leaving of workmen and others, also applicable to tell-tales for watchmen. - - - -	1982	14th July 1870	William Alfred Whitty. Herbert Chatteris.
Counting registers, applicable to counting the revolutions of shafts in various kinds of machinery, steam and other engine indicators for registering stroke or travel indicators for gas or water meters, clocks, adding machines and registering devices of different kinds or for various purposes. (*Communicated by William Henry McNary.*)	1988	14th July 1870	William Edward Newton.
A new method of indicating or stamping with the standard or other mark china, earthenware and metallic measures for containing beer and other liquids.	2121	28th July 1870	William Haden Richardson.
An improved method of and apparatus for measuring the human body and draughting patterns for coats.	2142	1st Aug. 1870	George Schädler.
Tell-tale clocks - - - - -	2161	3rd Aug. 1870	Frederick Mantell Pratt.
Apparatus for registering the number of players in the game called "pool" or other games.	2265	15th Aug. 1870	James Hartley.
An improved recording pressure-gauge and alarm apparatus. (*tell tale.*) (*Communicated by Marmont B. Edson.*)	2411	3rd Sept. 1870	George Haseltine.
Weighing machines involving means for counting, registering, printing, adding and other operations connected with weighing scales.	2456	10th Sept. 1870	Henry Fairbanks.
Indicators for cabs and such like public vehicles -	2552	23rd Sept. 1870	Peter Gaskell. Henry Moon.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MEASURING LENGTH, &c.—*continued.*			
Improved apparatus for indicating and registering pool and other games of skill, and indicating the amount of money paid by the players for the use of the table.	2587	29th Sept. 1870	John James Cousins.
Improved apparatus for recording and indicating the distance travelled by wheeled vehicles. (*and amount of fare.*)	2598	30th Sept. 1870	John Jackson Ashworth.
Means or apparatus for raising and measuring beer and other liquids.	2651	6th Oct. 1870	Cuthbert Burnett.
Apparatus for indicating and measuring quantities	2667	8th Oct. 1870	Henry Lyon.
Certain improvements in mechanism or apparatus to be employed for simultaneously printing and delivering checks or tickets, consecutively numbered or otherwise, to persons entering places of amusement, riding in public vehicles, or for other purposes where checks are required as a means of detecting fraud.	2726	15th Oct. 1870	Richard Alphaeus Goodling.
Raising and registering the measurements of wine, spirits and other fluids by means of the self-registering fluid engine. - - -	2732	17th Oct. 1870	Matthias Smith. George Frederick Waldener. Arthur Carey Lee.
Numerical registering and indicating apparatus -	2752	19th Oct. 1870	George George.
Apparatus for measuring liquids - - -	2784	22nd Oct. 1870	William Fletcher.
An improved tell-tale mechanism applicable to clocks and watches. (*Communicated by Cyrille Duquet.*)	2931	7th Nov. 1870	David Lang.
Apparatus for registering and checking the money taken for admission to theatres and other places. - - - - -	2933	7th Nov. 1870	William Henry Maitland. William Lauderdale Maitland.
Apparatus for weighing and measuring quantities, and registering the same.	3000	16th Nov. 1870	Henry Lyon.
Apparatus for drawing off and measuring liquids -	3351	22nd Dec. 1870	Charles Alexander Calvert.

For measuring angles and altitudes, *see* "COMPASSES."
For measuring distances travelled, *see* "MEASURING PROGRESS."
For gas and water meters, *see* "METERS."
For testing strength and intensity of fluids, *see* "THERMOMETERS."
For testing strength and duration of materials, *see* "TESTING."
For indicating water level, *see* "GAUGES."

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MEASURING AND REGISTERING PROGRESS OF LOCOMOTIVES, CARRIAGES AND SHIPS; CARRIAGE TURNSTILES, REGISTERS AND COUNTING APPARATUS; LOGS AND SOUNDERS; MEASURING AND INDICATING FLOW OF STREAMS.			
Means or apparatus for measuring and indicating the distances travelled by vehicles.	82	11th Jan. 1870	Octave Vivier.
Improvements in ships' logs and sounding machines, and in the rotators thereof.	126	15th Jan. 1870	William Francis Reynolds.
Apparatus for recording the number of passengers who travel in omnibuses or other vehicles, together with the value of the fares paid by such passengers, applicable to other purposes.	131	15th Jan. 1870	Edward James Jeffs.
An improved apparatus for self-registering and checking the money taken for admissions to public entertainments and other places where a check on money taking is desirable.	178	20th Jan. 1870	Charles Alexander Calvert.
Communicating the direction of the wind from a vane to a dial or registering apparatus by means of electric wires, and without the aid of shafting.	293	1st Feb. 1870	James Edward Henry Gordon.
Apparatus for taking soundings at sea - - (*Communicated by Joseph Badin.*)	362	8th Feb. 1870	Charles Denton Abel.
Apparatus for checking the receipts by money takers, and for recording the number and class of admissions.	586	28th Feb. 1870	Robert Twiss Sutton.
A new or improved apparatus for registering or indicating figures or numbers, applicable to seats of chairs, weighing machines, and other useful purposes. (*numbering revolutions of cab wheels.*)	950	31st March 1870	Joseph Bailey.
Apparatus for indicating the distance travelled by cabs and other vehicles.	1012	6th April 1870	Frederick John Sweeting.
Improvements in the construction of omnibuses, and in apparatus for indicating the number of passengers entering therein.	1116	16th April 1870	Thomas Wood.
Mileage indicators for cabs and other vehicles -	1543	27th May 1870	Jonathan Sellers.
Means of checking and indicating the number of passengers carried by an omnibus or other similar public conveyance.	1674	9th June 1870	Charles Alexander Calvert.
Apparatus for indicating the speed of vessels and the velocity of running water. (*Communicated by Ferdinand Julius, Baron of Wedel-Jarlsberg.*)	1797	24th June 1870	Peter Jensen.
Ships' logs - - - - - -	2020	18th July 1870	Henrik Ramsten.
Indicators for cabs and such like public vehicles -	2552	23rd Sept. 1870	Peter Gaskell. Henry Moon.
Improved apparatus for recording and indicating the distance travelled by wheeled vehicles.	2596	30th Sept. 1870	John Jackson Ashworth.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MEASURING PROGRESS, &c.—*continued.*			
Certain improvements in mechanism or apparatus to be employed for simultaneously printing and delivering checks or tickets consecutively numbered or otherwise to persons entering places of amusement, riding in public vehicles, or for other purposes where checks are required as a means of detecting fraud.	2726	15th Oct. 1870	Richard Alphaeus Gooding.
Apparatus for registering the number of passengers carried in public carriages and the distance each has travelled.	2985	14th Nov. 1870	George Edmund Donisthorpe.
MEDICAL TREATMENT OF ANIMALS; WASHING, DIPPING AND SMEARING.			
Means for curing skin diseases in animals - -	684	8th March 1870	Charles Henry Williams.
A new or improved dip or smear for destroying vermin or disease in sheep or other animals.	1359	12th May 1870	Alexander Campbell.
Apparatus for administering medicine to horses and other animals.	2632	4th Oct. 1870	Thomas William Overman.
MEDICINES AND CURATIVE APPARATUS; MEDICAL BATHS; INHALING AND RESPIRATORY APPARATUS; INFANTS' FEEDING BOTTLES.			
Improvements in treating sulphur, sulphide of hydrogen, pyrites and other compounds of sulphur, and in obtaining products therefrom. - (*obtaining sulphate of soda.*)	46	6th Jan. 1870	James Hargreaves. Thomas Robinson.
Improved apparatus for diminishing the effects of the oscillation of vessels, and for preventing sea sickness. (*Communicated by Lorenzo Dow Newell.*)	157	19th Jan. 1870	Edward Thomas Hughes.
An improved toy air-gun and projectile for the same. (*and preventing pulmonary diseases.*) (*Communicated by Henry Josiah Griswold.*)	192	21st Jan. 1870	William Robert Lake.
A new compound and process for eliminating diseases and the cause of disease from the human body. (*ointment for inflammations, &c.*)	308	2nd Feb. 1870	Alfred Manks Mort.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MEDICINES, &c.—*continued.*			
Improvements in the construction of steam vessels and sailing vessels, and in apparatus employed for the better accommodation of passengers on board such vessels, and for lessening or preventing sea-sickness.	553	24th Feb. 1870	Henry Bessemer.
An improved apparatus for subcutaneous extractions and injections. (*and producing local anæsthesis.*) (*Communicated by Georges Dieulafoy.*)	640	4th March 1870	William Edward Gedge.
Sea-going vessels - - - - (*preventing sea-sickness.*)	659	5th March 1870	Frank Clarke Hills.
Improved apparatus for injecting and reducing liquids to a state of spray or minute subdivision. (*for inhaling rooms.*) (*Communicated by Alcide Sanial du Fay.*)	673	7th March 1870	William Edward Newton.
Treatment of cod-liver, castor and other medicinal oils in order to render the same more palatable.	819	19th March 1870	George Wakefield Fox.
An improved micrometric steelyard - - (*analytical balances.*) (*Communicated by Louis Jean Baptiste Saladin.*)	839	21st March 1870	William Robert Lake.
Apparatus employed in the administration of nitrous oxide gas (or other gas that may be inhaled) for indicating the quantity at each and every inhalation.	860	24th March 1870	Sunderland Mawson.
Clinical thermometers - - -	861	24th March 1870	Thomas Paton Hawkaley.
Means of and apparatus for effecting fumigation, vaporization and inhalation, applicable to medicinal and sanatory purposes. - -	1183	23rd April 1870	Charles Harley Savory. William Robert Barker.
Improvements in the manufacture of mustard and other plasters and in machinery for the same. (*Communicated by Paul Rigollot.*)	1315	7th May 1870	Emile Guenin.
Improved apparatus for enabling invalids and other persons to drink in a recumbent position.	1402	16th May 1870	Alfred Pocock.
A new and improved medicinal preparation of cod-liver oil called cod-liver oil jelly.	1414	17th May 1870	James Agnew.
Enveloping medicinal and other liquids - -	1463	20th May 1870	Jules Joseph Denoual.
An improved medicinal compound or stomachic cordial.	1499	24th May 1870	Henry Beriah Brook.
Improvements in the construction of steamships and other vessels employed for the conveyance of passengers, and in the means and apparatus employed to prevent or lessen sea-sickness on board such vessels. (*see* "SHIP-BUILDING.")	1559	27th May 1870	Henry Bessemer.
Improvements in the construction of steamships employed for the conveyance of passengers' luggage and cattle, and in the apparatus employed for such purpose on board ships, and for lessening or preventing sea-sickness.	1580	30th May 1870	Henry Bessemer.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MEDICINES, &c.—*continued.*			
Pill-making machines - - -	1583	31st May 1870	Lawrence Gardner. Thomas Bushby.
An improved method of applying moisture and heat medicated or otherwise to the animal frame. (*fomenting pad.*)	1704	14th June 1870	Alfred Ford.
An improved anti-hemorrhoidal apparatus or anti-hemorrhoidal plate.	1710	15th June 1870	François Dupuy.
Improvements in steam vessels and sailing vessels, and in the construction and mode of working machinery or apparatus employed on board such vessels, for the purpose of lessening the motion of certain parts thereof and for lessening or preventing sea-sickness.	1742	17th June 1870	Henry Bessemer.
Bottles and stoppers and other articles to be employed therewith, some of which are applicable to other purposes and the manufacture thereof. (*feeding botttles.*)	1749	18th June 1870	Alexander Southwood Stocker.
Respiratory apparatus - - -	1800	24th June 1870	James Sinclair.
Certain improvements in the manufacture of cordials	1942	8th July 1870	William Gray Jackson.
Apparatus for fastening and securing cupboards or receptacles for containing poisons or other chemical preparations, which invention is also applicable to other similar purposes.	2175	4th Aug. 1870	John Clarkson Young.
Covering and preserving medical and other plasters (*Communicated by Dr. Benjamin Brandreth.*)	2391	2nd Sept. 1870	Ernest Seyd.
A novel application of stereoscopic views to match-boxes and other boxes or cases. (*boxes for holding pharmaceutical substances.*)	2408	3rd Sept. 1870	Hippolyte Fontaine.
An improved apparatus for inhaling nitrous oxide or other gases.	2423	7th Sept. 1870	Edward Edwards.
Manufacture of lint for surgical, medical and other purposes.	3042	21st Nov. 1870	Arthur Chilver Tupper.
Manufacture of sulphates of soda and potassa - (*glauber salts.*)	3045	21st Nov. 1870	James Hargreaves. Thomas Robinson.
Apparatus employed or used in the manufacture of sulphates of soda and potassa. - - (*glauber salts.*)	3047	21st Nov. 1870	James Hargreaves. Thomas Robinson.
An improved respirator to be used in confined positions rendered unhealthy from the presence of noxious gases or effluvia.	3056	22nd Nov. 1870	Arnold Hirst Watkins.
Improvements in the manufacture of soap, and in chemical compounds applicable to the cure of skin diseases.	3098	25th Nov. 1870	Spendlove Desborough.
Apparatus for obtaining, condensing, utilizing and applying mineral and other waters. (*using essences as pills.*)	3202	6th Dec. 1870	Thomas Dunn.
An improved method of applying moisture and heat medicated or otherwise to the animal frame.	3262	13th Dec. 1870	Alfred Ford.
Portable sustaining voltaic batteries - - (*for medical purposes.*)	3308	19th Dec. 1870	Desmond Gerald Fitz Gerald.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MEDICINES, &c.—*continued.*			
Spirometers	3343	21st Dec. 1870	Robert Mann Lowne.
Improvements in medicating cotton and other fibres for sanitary and surgical purposes, and in machinery employed therein.	3367	24th Dec. 1870	John Gamgee. William Henry Maitland.
METALLIC SALTS AND OXIDES.			
Improvements in obtaining and applying iron and manganese protoxides or their carbonates in obtaining and applying baryta, strontia and salts thereof in obtaining potash, soda and sulphur, and in utilizing bye or "waste" products arising in the manufactures of chlorine, copper and alum.	881	25th March 1870	Joseph Townsend.
An improved method of treating and utilizing some of the waste products resulting from the purifying of gas in gasworks. (*recovering sulphate of iron.*)	1099	14th April 1870	Robert John Everett.
Making white lead	1111	16th April 1870	Isham Baggs.
Improvements in the decomposition of certain metallic sulphides and in the production of alkaline compounds, also of a compound of sulphur by such decomposition.	1176	22nd April 1870	William Gossage.
Improvements in treating manganese, ores, oxides or salts, and in making ferromanganese.	1806	25th June 1870	George Thomson.
An improved method of absorbing sulphurous fumes or sulphurous acid, and obtaining thereby useful products.	1892	4th July 1870	Michael Cahen.
Manufacture of iron salts or compounds, and in the purification of gas.	1952	9th July 1870	William Marriott.
Manufacture of iron and steel and apparatus used therein. (*producing oxide of iron.*)	2373	30th Aug. 1870	John James Bodmer.
Manufacture of soda (*treating zinc sulphide precipitate.*)	2399	2nd Sept. 1870	Edward Andrew Parnell.
Process of revivifying the materials used for the purification of gas. (*oxide of iron.*)	2664	7th Oct. 1870	Andrew McNeil. William Wheaton.
Improvements in boxes and bearings for axles and other shafts, and in compositions to be applied thereto. (*using plumbago and comminated leather as lining for axle boxes.*) (*Communicated by Eliza Dexter Murfey.*)	2879	1st Nov. 1870	John Henry Johnson.
Production of iron and steel and of oxide of iron	3139	30th Nov. 1870	Henry Larkin. Andrew Leighton. William White.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METALS.			
I.—Smelting, Extracting and Reducing Metals; Treating Ores; Refining, Tempering and Annealing Metals; Manufacture of Iron and Steel; Metallic Alloys.			
Furnaces - - - - - - (*for reducing ores and working metals.*)	74	10th Jan. 1870	Walter Watson Hughes.
Apparatus for puddling iron, applicable also as tuyeres for metallurgical furnaces generally. (*Communicated by Auguste Ponsard.*)	81	11th Jan. 1870	John Henry Johnson.
Improvements in the preparation of iron ores for smelting, and in kilns or furnaces employed for that purpose.	176	20th Jan. 1870	Charles Cochrane.
Refining lead - - - - - -	177	20th Jan. 1870	George Edward Fawcus.
Treatment or preparation of various natural substances so as to render them applicable for use in journal boxes and other parts of machinery or other articles whose surfaces are intended to be subjected to friction. (*metalline.*) (*Communicated by Stuart Gwynn.*)	190	21st Jan. 1870	William Edward Newton.
Improvements in the manufacture of chains and chain cables, and in machinery for the same. (*tempering and annealing.*) (*Communicated by Augustin Onésime David.*)	193	21st Jan. 1870	Alexander Melville Clark.
Treatment of cupreous ores containing silver -	282	31st Jan. 1870	Frederic Claudet.
Improvements applicable to steam boiler and other furnaces. - - - - - - (*reverberating.*)	292	1st Feb. 1870	Joshua Fisher. Henry Fisher.
Effecting the electro-deposition of nickel - - (*manufacturing nickel ingots for anodes.*)	303	2nd Feb. 1870	Isaac Adams, junr.
Treating iron - - - - - - (*purifying.*) (*Communicated by William Fields and Jonathan Manning Roberts.*)	317	3rd Feb. 1870	Alfred Vincent Newton.
An improvement in the process of manufacturing wrought iron or steel. (*Communicated by James Henderson.*)	318	3rd Feb. 1870	Alfred Vincent Newton.
Improvements in treating iron ores, and in the furnaces or ovens employed for such purpose.	328	4th Feb. 1870	Alexandre Le Brun-Virloy.
Apparatus for the treatment of argentiferous leads	349	7th Feb. 1870	Gustave Dumont.
An improved crushing and disentegrating machine or mill. - - - - - (*breaking and grinding ores.*)	377	9th Feb. 1870	Ralph Peacock. Edward Wilson.
Machinery or apparatus for breaking or reducing stones, and for crushing quartz or schist, bones, emery, ores and all mineral and other substances. - - - - -	497	19th Feb. 1870	Ferdinand Oliver Camroux. George Oliver.
Improvements in treating iron ores, and in processes and apparatuses for the production of cast steel where such ores are employed.	594	28th Feb. 1870	Charles William Siemens.
An improved alloy or metallic compound applicable for the bearings or the lining of bearings of machinery.	616	2nd March 1870	Thomas Short Davis.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METALS (*Smelting*)—*continued.*			
Case-hardening	626	3rd March 1870	James Armitage.
Puddling and balling furnaces	660	5th March 1870	Stephen Meredith.
Preparing and treating auriferous and argentiferous ores.	667	7th March 1870	George Holcroft. Robert Martin Roberts.
Improvements in smelting iron ore and in furnaces employed therein.	697	9th March 1870	George Fowler.
Direct-acting power hammers and machinery for crushing and pulverising. (*crushing ores.*)	715	10th March 1870	Samuel Chatwood. John Sturgeon.
Improvements applicable to steam-boiler, smelting, reverberating and other furnaces.	741	14th March 1870	William Payne.
Improvements in the construction of furnaces, and in the method of manufacturing malleable and crucible steel and iron.	759	15th March 1870	John Solomon Atkin. Isaac Deeley. Francis Newbery.
Improved processes for the treatment of ores in order to extract copper therefrom. (*Communicated by the Company or Society Cyprien Marie Tessie du Motay and Company.*)	849	22nd March 1870	Thomas James Smith.
Smelting copper and other metals	874	25th March 1870	Thomas Gibb. Charles Gelstharp.
Extracting copper from ores and compounds	875	25th March 1870	Thomas Gibb. Charles Gelstharp.
A new or improved docimastic process and methods for the treatment of the simple sulphurets, the complex sulphurets and the arsenio-sulphurets of lead, antimony, copper and iron, as well as coppery matts and coppers containing precious metals, in order to extract silver and gold therefrom. (*Communicated by Cyprien Marie Tessié du Motay.*)	876	25th March 1870	Thomas James Smith.
Improvements in obtaining and applying iron and manganese protoxides or their carbonates, in obtaining and applying baryta, strontia and salts thereof, in obtaining potash, soda and sulphur, and in utilising bye or "waste" products arising in the manufactures of chlorine, copper and alum.	881	25th March 1870	Joseph Townsend.
Manufacture of iron (*Communicated by Adam Charles Girard and Marie Etienne Jules Poulain.*)	990	5th April 1870	Henry Woodcroft Hammond.
An improvement in the manufacture of wrought iron and steel.	1051	9th April 1870	James Henderson.
Manufacture of steel	1053	9th April 1870	Alexander Parkes.
Production of metallic alloys of manganese (*Communicated by Elliot Savage and Joseph Mayer and Julius Waterman.*)	1100	14th April 1870	Alfred Vincent Newton.
Construction of retorts, muffles, pots and furnaces for reducing zinc and other ores.	1113	16th April 1870	Alfred Borgnet.
Improvements in treating copper, zinc, tin and their compounds, and in obtaining metallic compounds or alloys suitable for various useful and ornamental purposes.	1118	16th April 1870	Andrew Linmere Dowie.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METALS (*Smelting*)—*continued.*			
Improvements in applying heat and in apparatus for applying heat in various chemical and other operations, such as roasting, oxidising, calcining, decomposing and volatilising. (*roasting ores and minerals.*)	1124	18th April 1870	Joseph Townsend.
Manufacture of coke and the apparatus connected therewith. (*for blast furnaces.*)	1149	20th April 1870	Jonathan Green.
Improvements in treating calcined pyrites, for the better utilization thereof in the processes of manufacturing pig and bar iron, and in the means or apparatus adopted for such treating.	1167	21st April 1870	Thomas Bell.
Improvements in the means of and apparatus for crushing ores and other mineral substances, and separating therefrom the metals which they contain, part of which improvements is applicable to the bearings of machinery generally. (*roasting or calcining ores.*)	1198	25th April 1870	Leonard Wray.
Machinery for puddling - - -	1280	4th May 1870	Benjamin Walker. John Frederick Augustus Pflaum.
Improvements in obtaining and applying heat, and in furnaces employed therein, also in utilizing a product resulting therefrom. (*for metallurgy.*)	1304	6th May 1870	Thomas Don.
A new or improved metallic alloy for the bearings or brasses of shafts, axles of carriages and other rotating bodies. - - - - -	1332	10th May 1870	James Jones. Edward Richard Dunn.
Manufacture of bronze - - - - (*Communicated by George Montefiore Levi and Charles Kunzel.*)	1406	17th May 1870	Joseph Levi Montefiore.
Manufacture of iron - - - -	1409	18th May 1870	Edwin Francis Jones.
Improvements in blast and other furnaces, and in extracting metals from their ores and from metallurgical products, in separating and refining such metals, and in the means and apparatus employed for such purposes.	1527	26th May 1870	Julian Bernard.
Converters for the manufacture of steel and other metals, refining oil and other liquids.	1528	26th May 1870	James Webster.
Improvements in the treatment and recovery of metallurgical products, and in the means and apparatus employed therein.	1536	26th May 1870	Julian Bernard.
An improvement in the process of refining and purifying cast iron for foundry and for other purposes.	1544	27th May 1870	James Henderson.
Machines for grinding, concentrating and refining tin and other ores in order to extract the metals in a pure state.	1561	28th May 1870	Samuel Henry Stephens.
Machinery for pulverizing or reducing ores and other hard substances.	1602	2nd June 1870	Francis Dingey.
Furnaces for metallurgical purposes - - (*Communicated by Auguste Ponsard.*)	1624	4th June 1870	John Henry Johnson.
Treatment of slag and other vitreous material - (*Communicated by Henry Baldwin, jun.*)	1644	7th June 1870	George Tomlinson Bousfield.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METALS (*Smelting*)—*continued.*			
A continuous process for treating the ores of metals and the apparatus and mechanical appliances used therein. (*Communicated by Robert Spencer.*)	2668	8th Oct. 1870	William Edward Newton.
Manufacture of manganese and alloys of manganese	2677	10th Oct. 1870	Josiah Mason. Alexander Parkes.
Construction of cupola furnaces	2686	11th Oct. 1870	Peter Newland.
Production of motive-power and appliances connected therewith. (*for iron works.*)	2729	17th Oct. 1870	George Bell Galloway. George Thomas Galloway.
An improved anti-friction metal for the bearings and steps of shafts and engines and machinery.	2783	22nd Oct. 1870	John Hoyle.
Grate bars	2794	24th Oct. 1870	William Fox.
Obtaining copper from cupreous pyrites	2800	24th Oct. 1870	Jonathan Down.
Rolling and finishing circular metal plain or irregular rods and tubes.	2856	31st Oct. 1870	George Walter Dyson. Henry Arthur Hall.
Ore-washing machines	2859	31st Oct. 1870	Hesikiah Bradford.
Treating cast iron so as to improve and secure uniformity of quality.	2889	2nd Nov. 1870	William Henderson.
Improvements in puddling furnaces, and in the preparation and application of certain materials for building and fettling the same.	2913	4th Nov. 1870	Frederick Francis Jones.
Smelting or reducing metals from their ores	2938	8th Nov. 1870	Isham Baggs.
Improvements in refining cast iron for foundry purposes and in the production of wrought iron and steel.	2940	8th Nov. 1870	James Henderson.
Construction of crucibles or pots used in the manufacture of glass and other materials. (*for melting metals.*)	2966	11th Nov. 1870	Edward Bolton.
Improvements in the manufacture of wire, which improvements are also applicable in the manufacture of other metallic articles in the production of which the process of annealing forms a part.	2981	14th Nov. 1870	Richard Hill. Albert Thomas Ward. Carl Friedrich Claus.
Furnaces (*reverberatory.*)	3021	18th Nov. 1870	Julius Frölich.
Furnaces for smelting iron	3054	22nd Nov. 1870	Richard Brown.
Certain furnaces used in the manufacture of iron	3085	24th Nov. 1870	William Beardmore.
Improvements in the manufacture of iron and steel and castings of the same, and in apparatus employed therefor. (*Communicated by John Ware Middleton.*)	3087	24th Nov. 1870	George Haseltine.
Improvements in the manufacture of iron and steel and in furnaces and apparatus to be used in the said manufacture, parts of which improvements may also be applied to other purposes.	3099	25th Nov. 1870	Thomas Callender Hinde.
Improvements in calcining and reducing iron ores and in furnaces or kilns employed in connection therewith, which improvements are applicable chiefly to the production of cast steel.	3134	30th Nov. 1870	Charles William Siemens.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METALS (*Smelting*)—*continued.*			
Improvements in treating iron ores, and in processes and apparatus for the production of cast steel and malleable iron.	3138	30th Nov. 1870	William Hackney.
Production of iron and steel and of oxide of iron -	3139	30th Nov. 1870	Henry Larkin. Andrew Leighton. William White.
An improved process of separating precious metals from lead and zinc and apparatus employed therefor. (*Communicated by Edward Balbach, junr.*)	3175	3rd Dec. 1870	George Hazeltine.
Blast-furnaces - - - - -	3187	3rd Dec. 1870	James Hunter.
Means of extracting or separating metals from their silicates.	3190	5th Dec. 1870	Peter Kagenbusch.
Improvements in dressing, crushing and amalgamating metallic ores, and in apparatus employed for these purposes.	3241	10th Dec. 1870	John Boyns.
Puddling, heating and other furnaces - -	3282	15th Dec. 1870	Dougald McCorkindale.
Armour-plated ships, forts, fortifications and gun shields. (*hardening the surface.*)	3300	17th Dec. 1870	John Moore Hyde.
Improvements in blast furnaces and in the employment of the waste gases thereof. (*calcining iron ores.*)	3327	20th Dec. 1870	James Hunter.
Improvements in dressing cannell coal and other minerals, and in apparatus employed for that purpose. (*dressing iron ore.*)	3333	21st Dec. 1870	William Firth.
Improved furnaces for melting and puddling iron or steel and for heating iron, steel and other metals.	3337	21st Dec. 1870	Andrew Howatson.
Improvements in machinery for stamping and breaking ores and separating the same from substances with which they may be combined, parts of which improvements are also applicable in the construction of steam hammers and steam-engines. - - - - -	3357	23rd Dec. 1870	James Willoughby. William Willoughby. Joseph Willoughby. Samuel Willoughby.
II.—Casting and Moulding Metals; Moulds and Core Boxes.			
Treatment of cast iron for the production of castings therefrom. (*Communicated by Nicholas John Poutiloff.*)	72	10th Jan. 1870	Charles Denton Abel.
Improvements in obtaining oil from carbonaceous substances, in utilizing the bye-products and residues, and in making manure and moulders' blackening.	108	13th Jan. 1870	James Greenshields.
Improvements in the manufacture of shot, and in apparatus employed therein.	134	15th Jan. 1870	Gerhard Lampen.
Improvements in the manufacture of lead-encased tin-pipes, and in apparatus employed in such manufacture.	147	18th Jan. 1870	Hiram Haines.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METALS (*Casting*)—*continued.*			
Improvements in or connected with the moulding or casting of metals, and in the apparatus to be employed therein. - - - -	602	1st March 1870	William Mushet. Robert Mushet.
Apparatus for moulding flanged and socket pipes and columns. - - - -	654	5th March 1870	Enoch Openshaw Taylor. George Field.
Improvements in the manufacture of hollow cast-iron cooking utensils, and in the means or apparatus employed therefor or connected therewith, part of which apparatus is applicable to the moulding of other articles.	696	9th March 1870	John Neilson.
Improvements in or connected with the manufacture of "blackening" for foundry purposes, and in the means or apparatus employed therefor.	757	15th March 1870	Frederick Pattison.
Apparatus for running or pouring metals and for moulding and forming the same.	809	18th March 1870	James Murdoch Napier.
Mantel register stoves and register stoves - -	893	26th March 1870	James Clifford Morgan. Henry Macaulay. Francis William Waide.
Forming holes in iron castings - - -	995	5th April 1870	John Pickering.
Apparatus for skimming cast iron during the process of casting.	1028	7th April 1870	Thomas Robinson.
A new or improved metal founders' blacking -	1090	13th April 1870	Frederick Pattison.
Casting mould boards - - -	1391	14th May 1870	Richard Hickman Murray.
Improvements in machinery for corrugating and moulding sheet metal, which improvements are also applicable for other purposes. (*see* "MOULDINGS.") (*Communicated by Asa Johnson and William Thornton Still.*)	1566	28th May 1870	Alexander Melville Clark.
Improvements in fire-arms and ordnance and in rifled projectiles, and machinery for the manufacture of the same. (*moulding and ramming machine for projectiles.*)	1745	17th June 1870	Sir Joseph Whitworth.
Machinery or apparatus for moulding for casting -	1860	30th June 1870	George Little.
Improvements in the manufacture of iron tubes, and in machinery employed therein, applicable also to the manufacture of tubes of other metals.	1980	13th July 1870	Henry Kesterton.
Manufacture of railway wheels; also in the moulds and the converting furnaces to be used in the manufacture of railway wheels. (*Communicated by John Blake Tarr.*)	2102	26th July 1870	Alfred Vincent Newton.
Production of cast-iron pipes, columns and other similar castings.	2242	12th Aug. 1870	William Oliver Johnston.
Machinery for manufacturing type - - (*Communicated by William Wallace Dunn.*)	2427	7th Sept. 1870	George Haseltine.
Improvements applicable to letter-press printing machines, and in the production of stereotypes to be used therewith. (*casting stereotype plates.*)	2514	19th Sept. 1870	Edmund Squire Norcombe.
Manufacture of metal plates employed for flat printing and other analogous purposes.	2524	20th Sept. 1870	Michael Daintry Hollins.
An improved type casting, breaking, rubbing and setting machine.	2527	20th Sept. 1870	John Alfred Thomas Overend.
Metal founders' blacking - - -	2609	1st Oct. 1870	John Carrington Sellars.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METALS (*Casting*)—*continued.*			
Improved moulding apparatus for cast-iron ingots and other castings.	2819	27th Oct. 1870	John Westray.
Improvements in making moulds for casting and in apparatus therefor.	2977	12th Nov. 1870	John Page.
An improved method of and apparatus for compressing metals in a liquid condition. (*Communicated by Constantine Michael Ocooneff.*)	3001	16th Nov. 1870	George Haseltine.
Improvements in the manufacture of iron and steel and castings of the same, and in apparatus employed therefor. (*Communicated by John Ware Middleton.*)	3087	24th Nov. 1870	George Haseltine.
Manufacture of longitudinally corrugated beams or rails of steel or iron for railways and for architectural and other purposes. (*casting the ingots.*)	3144	30th Nov. 1870	Richard Montgomery.
III.—Forging, Rolling, Hammering, Rivetting, Bending, Welding and Shaping Metals; Steam Hammers, Anvils.			
An improved gas stove, part of which is also applicable to blow pipes and forges.	15	3rd Jan. 1870	Thomas Charles Olney.
Machinery for rolling bars for the manufacture of shoes for horses and other hoofed animals.	30	4th Jan. 1870	Edward Cottam.
New or improved mechanism or apparatus for bending and otherwise operating upon metals or metallic substances.	70	8th Jan. 1870	William Thomson.
Improvements in rails, chairs and joints for the permanent way of railways, and in machinery for manufacturing such rails. - - - (*rolling the nails.*)	101	12th Jan. 1870	Alfred Buckingham Ibbotson. Johan Anderson Lindblade.
Improvements in the manufacture of chains and chain cables and in machinery for the same. (*Communicated by Augustin Onésime David.*)	193	21st Jan. 1870	Alexander Melville Clark.
Means or apparatus for straightening, stamping-out, shearing and otherwise shaping and treating iron, steel, copper and other metallic plates and sheets. (*Communicated by Gustave Piedbœuf.*)	351	7th Feb. 1870	Hermann Wedekind.
Improvements in the manufacture of twisted metal bars to form augers and drills, and an improved composite machine for twisting such augers and drills for screw-cutting and for cutting metal rods, bars and tubes. - - (*Communicated by Monsieur Jean Boulay.*)	404	11th Feb. 1870	Martin Macdermott. Arthur David Williams.
Improvements in the manufacture or production of metallic pipes and sheets and in making joints therefor. - - - - -	436	15th Feb. 1870	John Weems. William Weems.
Improved apparatus for heating knives for reaping and mowing machines in order to the partial hardening of such knives. - - -	502	21st Feb. 1870	Samuel Osborn. William Henry Fawcett.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METALS (*Forging*)—*continued.*			
Railways, tramways, common roads, and machines and vehicles to run thereon. (*rolling rails.*)	512	22nd Feb. 1870	William Bridges Adams.
Improvements in the manufacture of wrought metal wheels and in machinery for the same. (*Communicated by Claude Brunon, Barthelemy Brunon and Gabriel Brunon.*)	583	26th Feb. 1870	Alexander Melville Clark.
Machinery for twisting, compressing and rolling tobacco, applicable also to rolling, compressing and drawing metals. - - - - -	652	5th March 1870	Elijah Robinson. Charles Frederick Robinson. James Edward Hyde Andrew.
Improvements in the manufacture of wheel tires, hoops, bands and such like articles, and in the machinery or apparatus employed therein. (*rolling.*) (*Communicated by Hippolyte Ulysse Petin and Jean Marie Gaudet.*)	710	10th March 1870	John Henry Johnson.
Manufacture of armour plates and other heavy forms of malleable iron or steel, or of steel and iron combined.	711	10th March 1870	Joshua Jeavons.
Atmospheric stamps and hammers, partly applicable to other purposes. (*forge hammers.*)	749	15th March 1870	William Husband.
Making horse-shoes - - - - - (*pressing and dies used.*)	780	16th March 1870	James Townsend Walker.
Dies or tools used in drawing metallic tubes -	783	16th March 1870	John Watkins.
Improvements in the manufacture of wheel tyres and in the machinery or apparatus employed therefor. (*bending and rolling.*)	848	22nd March 1870	Daniel Gray.
Improvements in the manufacture of bars, plates and sheets of steel, or steel and iron combined, and in the process of welding employed in such manufacture. (*Communicated by John Absterdam.*)	856	23rd March 1870	William Robert Lake.
Improvements in the manufacture of armour plates and in the machinery or apparatus employed in such manufacture. - - - - -	869	24th March 1870	Thomas Claridge. Joshua Jeavons.
Machinery or apparatus for heating and delivering metal bars. (*Communicated by Samuel A. Darrach.*)	887	26th March 1870	Albert Angell.
Improvements in reducing metal rods, bars and tubes, and in apparatus in connection therewith.	917	29th March 1870	Hesketh Hughes.
Machinery or apparatus for soldering tin cases or canisters or other similar vessels.	945	31st March 1870	John Moir Clark.
An improvement in rolling mills or machines for manufacturing round and square bar iron. (*Communicated by Hyacinthe Vigour.*)	1209	27th April 1870	William Edward Gedge.
An improved arrangement of gearing for rolling mills.	1256	2nd May 1870	William Anderson.
Improved machinery for pointing and finishing nails. (*hammer and anvil.*) (*Communicated by Sebastien Schlesinger.*)	1351	11th Aug. 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METALS (*Forging*)—*continued.*			
Improvements in the manufacture of welded iron or steel tubes and in the means or apparatus employed in such manufacture.	1435	18th May 1870	Edward Peyton.
Manufacture of metallic bedsteads, sofas, couches or other articles for sitting or reclining upon.	1436	18th May 1870	Edward Peyton.
Improvements in rolling metallic rods or wire, and in machinery employed for that purpose.	1454	19th May 1870	James Partridge Blake.
A new or improved system of grooves for rolling and shaping iron or other metals. (*Communicated by Pierre Michel Sibut, senior.*)	1553	27th May 1870	William Edward Gedge.
Improvements in machinery for corrugating and moulding sheet metal, which improvements are also applicable for other purposes. (*Communicated by Asa Johnson and William Thornton Still.*)	1566	28th May 1870	Alexander Melville Clark.
Improvements in the manufacture of wrought metal tubes and in machinery or apparatus employed for that purpose. (*bending skelps.*) (*Communicated by Robert Briggs.*)	1570	30th May 1870	Charles Denton Abel.
Apparatus for drawing tube skelps - - (*Communicated by Robert Briggs.*)	1571	30th May 1870	Charles Denton Abel.
Improvements in the manufacture of tilt and forge hammer heads, and in hursts and tail hoops.	1734	17th June 1870	Joseph Eaton Lee.
Improvements in the manufacture of welded iron and steel tubes and in apparatus therefor. -	1799	24th June 1870	Andrew Stewart. James Stewart.
Improvements in planishing, levelling and creasing frying pans and other metallic articles, and in tools or apparatus employed for those purposes.	1807	25th June 1870	Samuel James Fellows. Edgar Fellows.
Manufacture of nails and spikes - -	1956	11th July 1870	Thomas Holcroft.
A continuous self-wedging fencing - -	1970	12th July 1870	Richard Long.
Improvements in the manufacture of iron tubes and in machinery employed therein, applicable also to the manufacture of tubes of other metals.	1980	13th July 1870	Henry Kesterton.
Manufacture of iron - - - - -	2044	20th July 1870	William Robinson.
Improvements in the manufacture of stoppers for bottles and other vessels and in the means employed in such manufacture. (*by stamping.*)	2095	25th July 1870	Henry Brooks.
Manufacture of twisted metal bars to form augers and drills, and an improved composite machine for twisting such augers and drills and for cutting screws. - - - - - (*Communicated by Jean Boulay.*)	2220	10th Aug. 1870	Martin Macdermott. Arthur David Williams.
Treating metal wire to prevent loss of heat during rolling or reducing.	2243	12th Aug. 1870	John Matthew Habershon.
Improvements in drawing and bending sheet metal and in the machinery or apparatus therefor. (*and stamper machine.*)	2257	13th Aug. 1870	James Robertson.
Machinery or apparatus for forming, hardening, tempering, straightening and cutting paragon or other wires to be used for ribs and stretchers of umbrellas or other useful purposes. -	2420	6th Sept. 1870	Charles Bottom. Joseph Hallam. Samuel Westley Hallam.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METALS (*Forging*)—*continued.*			
Railways, tramways, common roads, and machines and vehicles to run thereon. (*rolling rails.*)	512	22nd Feb. 1870	William Bridges Adams.
Improvements in the manufacture of wrought metal wheels and in machinery for the same. (*Communicated by Claude Brunon, Barthelemy Brunon and Gabriel Brunon.*)	583	26th Feb. 1870	Alexander Melville Clark.
Machinery for twisting, compressing and rolling tobacco, applicable also to rolling, compressing and drawing metals. - - - - -	652	5th March 1870	Elijah Robinson. Charles Frederick Robinson. James Edward Hyde Andrew.
Improvements in the manufacture of wheel tires, hoops, bands and such like articles, and in the machinery or apparatus employed therein. (*rolling.*) (*Communicated by Hippolyte Ulysse Petin and Jean Marie Gaudet.*)	710	10th March 1870	John Henry Johnson.
Manufacture of armour plates and other heavy forms of malleable iron or steel, or of steel and iron combined.	711	10th March 1870	Joshua Jeavons.
Atmospheric stamps and hammers, partly applicable to other purposes. (*forge hammers.*)	749	15th March 1870	William Husband.
Making horse-shoes - - - - - (*pressing and dies used.*)	780	16th March 1870	James Townsend Walker.
Dies or tools used in drawing metallic tubes -	783	16th March 1870	John Watkins.
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Improvements in the manufacture of bars, plates and sheets of steel, or steel and iron combined, and in the process of welding employed in such manufacture. (*Communicated by John Absterdam.*)	856	23rd March 1870	William Robert Lake.
Improvements in the manufacture of armour plates and in the machinery or apparatus employed in such manufacture. - - - - -	869	24th March 1870	Thomas Claridge. Joshua Jeavons.
Machinery or apparatus for heating and delivering metal bars. (*Communicated by Samuel A. Darrach.*)	887	26th March 1870	Albert Angell.
Improvements in reducing metal rods, bars and tubes, and in apparatus in connection therewith.	917	29th March 1870	Hesketh Hughes.
Machinery or apparatus for soldering tin cases or canisters or other similar vessels.	945	31st March 1870	John Moir Clark.
An improvement in rolling mills or machines for manufacturing round and square bar iron. (*Communicated by Hyacinthe Vigour.*)	1209	27th April 1870	William Edward Gedge.
An improved arrangement of gearing for rolling mills.	1256	2nd May 1870	William Anderson.
Improved machinery for pointing and finishing nails. (*hammer and anvil.*) (*Communicated by Sebastien Schlesinger.*)	1351	11th Aug. 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METALS—*continued.*			
IV.—Cutting, Planing, Punching, Boring and Rifling Metals.			
Breech-loading fire-arms - - - - (*rifling the barrels.*)	115	13th Jan. 1870	Albert Bernard Ziesohang. Frederick Louis Hugo Schmidt.
Improvements in the manufacture of chains and chain cables, and in machinery for the same. (*Communicated by Augustin Onésime David.*)	193	21st Jan. 1870	Alexander Melville Clark.
Means or apparatus for straightening, stamping-out, shearing and otherwise shaping and treating iron, steel, copper and other metallic plates and sheets. (*Communicated by Gustave Piedbœuf.*)	351	7th Feb. 1870	Hermann Wedekind.
Improvements in the manufacture of twisted metal bars to form augers and drills, and an improved composite machine for twisting such augers and drills for screw cutting and for cutting metal rods, bars and tubes. (*Communicated by Monsieur Jean Boulay.*)	404	11th Feb. 1870	Martin Macdermott. Arthur David Williams.
Apparatus or machinery to be employed for facing, grooving or otherwise preparing blocks of stone, portions thereof being also applicable for other purposes. (*planing metals.*)	429	14th Feb. 1870	Thomas Taylor Lingard.
Manufacture of stocks for screwing and cutting iron pipes, bolts and other similar uses.	525	23rd Feb. 1870	George Leech.
Hand punching machines - - - -	528	23rd Feb. 1870	Thomas Andrew.
Manufacture of metal bushes for casks or barrels - (*use of hardened steel punch.*)	902	28th March 1870	William Gray. Thomas Biggin.
Improved machinery for making horse-shoe and other nails. (*cutting off.*) (*Communicated by Sebastien Schelsinger.*)	973	2nd April 1870	William Edward Newton.
Forming holes in iron castings - - -	995	5th April 1870	John Pickering.
Machinery or apparatus for boring, drilling and turning wood or metal. - - - -	1140	19th April 1870	David Sowden. Reuben Calvert Stephenson.
Machinery for piercing and drilling tangs and scales for table knives and forks, table and butchers' steels and butchers' knives. - -	1309	7th May 1870	Joseph Nixon. Jabez Wintrebottom.
Machinery for shaping wood and other materials - (*shaping iron.*)	1395	16th May 1870	Henry Augustus Biertumpfel. William James Loveday.
Improvements in the manufacture of sockets and ferrules of wrought iron and other metals and in machinery employed for that purpose. (*Communicated by Robert Briggs.*)	1569	30th May 1870	Charles Denton Abel.
An improved machine for making cut-nails -	1597	2nd June 1870	Henry Scheuerle. Daniel Gugisperg. Carl Scheib.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METALS (*Cutting*)—*continued.*			
Improvements in steel washers and in apparatus employed for forming the same. (*punch.*) (*Communicated by William Butcher and George Whitfield Billings.*)	1724	16th June 1870	William Robert Lake.
Means and apparatus for cutting type, and carving, moulding and ornamenting wood, metal, stone and other materials. - - - -	1776	22nd June 1870	William John Cunningham. Alphonso Dabb.
An improved process of drilling and cutting plane surfaces in the manufacture of crystal glass or metal ware, and an improved lathe for this purpose. (*Communicated by Georges Blau.*)	1819	27th June 1870	William Edward Gedge.
Machinery for punching metal - - -	1928	7th July 1870	Charles de Bergue.
Improvements in screws and screw drivers and in machinery for the manufacture of screws.	1971	12th July 1870	John Frearson.
Machinery or apparatus for reducing wood, metal or other hard material to fixed patterns. (*Communicated by Frederick Baldwin.*)	1987	14th July 1870	Giovanni Sconcia.
Improvements in cutting metals and other substances and in the apparatus used therefor.	2133	30th July 1870	Emanuel Lawrence.
Cutting, boring, grinding and pulverizing stone and other hard substances. (*Communicated by Benjamin Chew Tilghman.*)	2147	1st Aug. 1870	Alfred Vincent Newton.
Manufacture of twisted metal bars to form augers and drills, and an improved composite machine for twisting such augers and drills and for cutting screws. - - - - (*Communicated by Jean Boulay.*)	2220	10th Aug. 1870	Martin Macdermott. Arthur David Williams.
Improvements in rifled small-arms and ordnance, in tools or apparatus for rifling the same, and in projectiles for the said ordnance.	2282	18th Aug. 1870	William Hastings Sim.
Machinery for manufacturing type - - (*Communicated by William Wallace Dunn.*)	2427	7th Sept. 1870	George Haseltine.
An improved machine for cutting mill boards, card and similar materials to a required breadth and length.	2502	16th Sept. 1870	Henry James Williams.
Machinery and tools for pressing washers, bucket ears, box clips and similar articles out of sheet metal. - - - - -	2563	24th Aug. 1870	George Price. George Arthur Price.
Machinery for making wrought iron railway sleepers and applicable for shaping metals for other purposes. - - - - - - (*punching holes.*)	2763	20th Oct. 1870	Matthew Andrew Muir. James McIlwham.
Slide rests for producing geometrical figures and designs. (*on metal.*)	2830	27th Oct. 1870	Richard Pudsey Dawson.
Cutting, boring, grinding and pulverizing stone and other hard substances. (*metal.*) (*Communicated by Benjamin Chew Tilghman.*)	2900	3rd Nov. 1870	Alfred Vincent Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METALS (*Cutting*)—*continued.*			
Improvements in the construction of spindles and flyers for roofing and slubbing frames, and in tools or machinery for making the same. (*cutting screw grooves, punching flyer sockets.*)	3191	5th Dec. 1870	James Johnson. John Lowe. Joseph Fowler.
Machinery for shearing metals (*Communicated by Robert Briggs.*)	3332	21st Dec. 1870	Walter Williams.
V.—Plating and Coating Metallic Surfaces with Metal; Finishing and Ornamenting Metallic Surfaces, Soldering; Galvanising Metals, Galvano-plasty.			
Ornamenting surfaces	137	17th Jan. 1870	Frederick Samuel Lines.
A new or improved process for cleansing, drawing and tinning wire. (*Communicated by Jean Baptiste Auguste Daubié.*)	188	21st Jan. 1870	Thomas James Smith.
Effecting the electro-deposition of nickel	303	2nd Feb. 1870	Isaac Adams, junior.
Improvements in the manufacture or production of metallic pipes and sheets and in making joints therefor. (*lining lead pipes with tin or alloys.*)	436	15th Feb. 1870	John Weems. William Weems.
An improvement in the manufacture of needles (*gilding, plating or tinning.*) (*Communicated by Robert Jordan Roberts.*)	550	24th Feb. 1870	Alfred Vincent Newton.
Manufacture of copper tubes and also of copper rollers for calico printing, embossing and similar uses. (*by electro-deposition.*)	554	24th Feb. 1870	James Balleny Elkington. Charles Edwin Ryder.
Methods of manufacture and combinations therewith of processes for producing pictorial, ornamental and other designs and devices. (*on metal or foil.*)	600	1st March 1870	Benjamin George George.
Improvements in machinery for grinding and polishing saws, also applicable for grinding and polishing sheets or plates of steel and other metals. (*Communicated by William Jackson Lippincott.*)	889	26th March 1870	Charles Denton Abel.
Treatment of metal surfaces coated by electro deposition with nickel.	1068	12th April 1870	Isaac Adams, junior.
Producing engravings on glass, metals, wood and other substances.	1102	14th April 1870	Amédée Auguste Wilbaux.
Apparatus or means for manipulating gold leaf for ornamenting and lettering. (*see* "COPYING.")	1138	19th April 1870	Ezra Hoyle.
Machinery or apparatus for soldering tin cases or canisters or other similar vessels.	1230	29th April 1870	John Moir Clark.
An improved brushing machine for cleaning tin plates.	1320	9th May 1870	John Isaac Evans.
An improved mode of preventing the corrosion of iron exposed to water or dampness. (*Communicated by Cornelius Godfrey.*)	1603	2nd June 1870	Alfred Vincent Newton.
Ladles for molten metals	1669	9th June 1870	Francis William Webb.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METALS (*Plaiting*)—*continued.*			
Manufacture of tin and terne plates - - -	1780	22nd June 1870	Edmund Morewood.
Improvements in the manufacture of ornamental and other twisted metal work, and in the machinery, apparatus or means employed therein.	2016	16th July 1870	Stephen Tuddenham.
Water-pressure machinery to be used in the manufacture of hats and other articles. (*metal ornaments.*)	2261	15th Aug. 1870	Edward Colston Williams.
Manufacture of tacks and nails - - - (*electro-plating.*) (*Communicated by Howell Woodbridge Wright.*)	2359	27th Aug. 1870	William Robert Lake.
An improved mode of and means for electro-plating the interior of lead and other metal tubes or pipes.	2491	15th Sept. 1870	Hamilton E. Towle.
Improvements in the electro deposition of tin, which improvements are applicable to the prevention of the oxidization or tarnishing of silver surfaces, and as a coating for other metals.	2580	28th Sept. 1870	John Edward Bingham.
An improved machine for polishing metal and other surfaces. (*Communicated by Peter Fitz Randolph, Augustus Knapp Van Horne and Henry Vroom Voorhees.*)	2615	1st Oct. 1870	George Haselt ine.
Manufacture of tin plates and other metal-coated plates. - - - - -	2650	6th Oct. 1870	William Evans. Thomas Price.
Improved apparatus and fuel for facilitating the soldering of the joints of electric telegraph and other wires.	2658	7th Oct. 1870	John William Fletcher.
Printing metallic surfaces and metallic articles -	2696	12th Oct. 1870	Charles Lowe. William Peddie Harper.
Apparatus for cleansing, brushing and polishing tin plates.	2757	20th Oct. 1870	John Isaac Evans.
An improved process of electro-plating iron and steel with gold or silver. (*Communicated by Alexander Lawe.*)	3005	16th Nov. 1870	George Haseltine.
An improved process for coating iron, steel and other metals with electro-deposit of nickel or cobalt or of both metals in combination.	3396	30th Dec. 1870	Ernst Daniel Nagel.
METERS FOR GAS AND FLUIDS.			
Means and apparatus for gauging or regulating the flow of water or other liquids.	80	11th Jan. 1870	Edme Auguste Chameroy.
Water or other liquid or fluid meters - -	200	22nd Jan. 1870	William Henry Berry. George Jowett. James Wood.
An improved construction of meter for measuring water and other fluids. (*Communicated by José Francisco de Navarro.*)	231	25th Jan. 1870	Alfred Vincent Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METERS, &c.—*continued.*			
Improvements in apparatus used in the manufacture of gas, part of which apparatus is also applicable for ventilating mines, for promoting combustion, and for pumping, measuring and forcing fluids	259	28th Jan. 1870	Edmund Small Cathels. David Terrace.
An improved liquid meter	285	31st Jan. 1870	Albert Werkmeister.
Apparatus for measuring oil and other liquids	450	16th Feb. 1870	Isaac Mason.
Fluid meters (*Communicated by José Francisco de Navarro.*)	631	3rd March 1870	Alfred Vincent Newton.
Dry gas meters	685	8th March 1870	William Cowan. Alexander Donaldson. John Sandilands.
Valves (*for water meters.*) (*Communicated by Gerard Sickels and John Hill Thorndike.*)	882	25th March 1870	Bristow Hunt.
Improvements in meters for measuring fluids, and in packings and counting apparatus to be used therewith, parts of which improvements are applicable to other purposes.	965	2nd April 1870	Henry Law.
Improvements in water meters and in apparatus for boring cylinders.	1108	14th April 1870	Edward Pattison Sheldon.
An improved method of and apparatus for securing and measuring liquids. (*see* "VALVES.")	1117	16th April 1870	Nicholas Murphy.
An improved water meter, parts of which are applicable for other purposes. (*Communicated by Monsieur Jules Oury.*)	1340	11th May 1870	Hector Auguste Dufrené.
Improvements in meters for measuring fluids, and in packings and counting apparatus to be used therewith, parts of which improvements are applicable to engines for obtaining motive power from fluids under pressure and to other purposes.	1363	13th May 1870	Henry Law.
Meters, pumps or other engines for water or other liquid.	1634	6th June 1870	Alfred Willmer Pocock.
Gas meters	1729	16th June 1870	Henry Hermann Kromschroeder. William Parmingter Randall.
An improved faucet (*for water meters.*) (*Communicated by Isaac Carey.*)	1793	23rd June 1870	William Robert Lake.
Improvements in means or apparatus for measuring the flow or passage of liquids, which improvements are also applicable to obtaining motive power.	1883	2nd July 1870	George Scott. Henry Young.
Counting registers applicable to counting the revolutions of shafts in various kinds of machinery, steam and other engine indicators, for registering stroke or travel indicators, for gas or water meters, clocks, adding machines, and registering devices of different kinds or for various purposes. (*Communicated by William Henry McNary.*)	1988	14th July 1870	William Edward Newton.
An improvement in the manufacture of gas meters	2158	2nd Aug. 1870	Daniel Nathan Defries.
Meters for measuring water and other liquids	2275	17th Aug. 1870	Alfred Willmer Pocock.

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Manufacture of tin and terne plates - - -	1780	22nd June 1870	Edmund Morewood.
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An improved mode of and means for electro-plating the interior of lead and other metal tubes or pipes.	2491	15th Sept. 1870	Hamilton E. Towle.
Improvements in the electro deposition of tin, which improvements are applicable to the prevention of the oxidization or tarnishing of silver surfaces, and as a coating for other metals.	2580	28th Sept. 1870	John Edward Bingham.
An improved machine for polishing metal and other surfaces. (*Communicated by Peter Fitz Randolph, Augustus Knapp Van Horne and Henry Vroom Voorhees.*)	2615	1st Oct. 1870	George Haseltine.
Manufacture of tin plates and other metal-coated plates. - - - - - -	2650	6th Oct. 1870	William Evans. Thomas Price.
Improved apparatus and fuel for facilitating the soldering of the joints of electric telegraph and other wires.	2658	7th Oct. 1870	John William Fletcher.
Printing metallic surfaces and metallic articles -	2696	12th Oct. 1870	Charles Lowe. William Peddie Harper.
Apparatus for cleansing, brushing and polishing tin plates.	2757	20th Oct. 1870	John Isaac Evans.
An improved process of electro-plating iron and steel with gold or silver. (*Communicated by Alexander Lawe.*)	3005	16th Nov. 1870	George Haseltine.
An improved process for coating iron, steel and other metals with electro-deposit of nickel or cobalt or of both metals in combination.	3396	30th Dec. 1870	Ernst Daniel Nagel.
METERS FOR GAS AND FLUIDS.			
Means and apparatus for gauging or regulating the flow of water or other liquids.	80	11th Jan. 1870	Edme Auguste Chameroy.
Water or other liquid or fluid meters - -	200	22nd Jan. 1870	William Henry Berry. George Jowett. James Wood.
An improved construction of meter for measuring water and other fluids. (*Communicated by José Francisco de Navarro.*)	231	25th Jan. 1870	Alfred Vincent Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METERS, &c.—*continued.*			
Improvements in apparatus used in the manufacture of gas, part of which apparatus is also applicable for ventilating mines, for promoting combustion, and for pumping, measuring and forcing fluids - - - - -	259	28th Jan. 1870	Edmund Small Cathels. David Terrace.
An improved liquid meter - - -	285	31st Jan. 1870	Albert Werkmeister.
Apparatus for measuring oil and other liquids -	450	16th Feb. 1870	Isaac Mason.
Fluid meters - - - - - (*Communicated by José Francisco de Navarro.*)	631	3rd March 1870	Alfred Vincent Newton.
Dry gas meters - - - - -	685	8th March 1870	William Cowan. Alexander Donaldson. John Sandilands.
Valves - - - - - (*for water meters.*) (*Communicated by Gerard Sickels and John Hill Thorndike.*)	882	25th March 1870	Bristow Hunt.
Improvements in meters for measuring fluids, and in packings and counting apparatus to be used therewith, parts of which improvements are applicable to other purposes.	965	2nd April 1870	Henry Law.
Improvements in water meters and in apparatus for boring cylinders.	1108	14th April 1870	Edward Pattison Sheldon.
An improved method of and apparatus for securing and measuring liquids. (*see* "VALVES.")	1117	16th April 1870	Nicholas Murphy.
An improved water meter, parts of which are applicable for other purposes. (*Communicated by Monsieur Jules Oury.*)	1340	11th May 1870	Hector Auguste Dufrené.
Improvements in meters for measuring fluids, and in packings and counting apparatus to be used therewith, parts of which improvements are applicable to engines for obtaining motive power from fluids under pressure and to other purposes.	1363	13th May 1870	Henry Law.
Meters, pumps or other engines for water or other liquid.	1634	6th June 1870	Alfred Willmer Pocock.
Gas meters - - - - -	1729	16th June 1870	Henry Hermann Kromschroeder. William Parmingter Randall.
An improved faucet - - - (*for water meters.*) (*Communicated by Isaac Carey.*)	1793	23rd June 1870	William Robert Lake.
Improvements in means or apparatus for measuring the flow or passage of liquids, which improvements are also applicable to obtaining motive power. - - - -	1883	2nd July 1870	George Scott. Henry Young.
Counting registers applicable to counting the revolutions of shafts in various kinds of machinery, steam and other engine indicators, for registering stroke or travel indicators, for gas or water meters, clocks, adding machines, and registering devices of different kinds or for various purposes. (*Communicated by William Henry McNary.*)	1988	14th July 1870	William Edward Newton.
An improvement in the manufacture of gas meters	2158	2nd Aug. 1870	Daniel Nathan Defries.
Meters for measuring water and other liquids -	2275	17th Aug. 1870	Alfred Willmer Pocock.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
METERS, &c.—*continued.*			
Improvements in motive-power engines, which improvements are also in part applicable as brakes and dynamometers. (*liquid meters.*)	2285	18th Aug. 1870	Thomas Ivory.
Liquid meters - - - - (*Communicated by José Francisco de Navarro.*)	2338	25th Aug. 1870	Alfred Vincent Newton.
An improved apparatus for stopping the flow of gas through a meter when any determined quantity has been supplied. - - -	2350	26th Aug. 1870	Thomas Lacey. Stephen Charles Lacey.
Mechanical telegraphs and liquid to be used therewith, which fluid is also applicable as a power transmitter for other purposes, for the making of liquid joints and other purposes where it is desirable to use a liquid that does not readily congeal or evaporate. - - - (*for wet gas meters.*)	2384	1st Sept. 1870	Charles Henry Chadburn. William Chadburn.
Apparatus for measuring the flow of water or other liquids.	2472	14th Sept. 1870	Thomas Onion.
Apparatus for measuring and registering the flow of liquids.	2672	8th Oct. 1870	Adolphus Frankenberg.
Numerical registering and indicating apparatus - (*for meters.*)	2752	19th Oct. 1870	George George.
An improved water meter, parts of which are applicable for other purposes. (*Communicated by Jules Oury.*)	2965	11th Nov. 1870	William Armand Gilbee.
Meters for water or other fluids - - -	2991	15th Nov. 1870	John Brunton.
An improved liquid meter - - -	3323	20th Dec. 1870	John Reid.
MINING; BORING AND BLASTING ROCK; RAISING FROM MINES; GETTING COALS; DRAINING, LIGHTING AND VENTILATING MINES; SINKING WELLS.			
Improvements in apparatus used in the manufacture of gas, part of which apparatus is also applicable for ventilating mines, for promoting combustion, and for pumping, measuring and forcing fluids. - - - -	259	28th Jan. 1870	Edmund Small Cathels. David Terrace.
A new or improved system of registering or indicating apparatus for mining and other purposes.	457	16th Feb. 1870	Edmond Louis Ruelens.
Apparatus to be used in getting coal - -	487	18th Feb. 1870	Charles Bartholomew.
A new or improved compound or explosive mixture to be used as a substitute for gunpowder. (*for blasting.*)	507	21st Feb. 1870	Jules Fournier.
Improvements in the mode of and in machinery for splitting rocks. (*Communicated by John Robb.*)	540	24th Feb. 1870	Edward Primerose Howard Vaughan.
Machinery for excavating coal, stone and other minerals, and for compressing air. - -	571	26th Feb. 1870	Samuel Firth. Frederick Hurd.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MINING, &c.—*continued.*			
Improved apparatus for preventing accidents in the pits of mines or collieries.	591	28th Feb. 1870	Thomas Thomas.
An improved method of getting coal and for the machinery or apparatus connected therewith.	597	1st March 1870	Richard Stuart Norris.
Apparatus for cutting coal and other mineral -	620	2nd March 1870	George Edmund Donisthorpe.
Improvements in apparatus and in combined materials for generating gases for extinguishing fires in mines, vessels, buildings or other places, such apparatus being available for warming buildings or apartments.	642	4th March 1870	Thomas Atkins.
Construction of safety lamps used in mining, colliery and other underground operations.	645	4th March 1870	James Allison Hogg, the younger.
Improved means of ventilating and reducing the temperature of rooms or apartments in vessels, buildings and other structures. (*and mines.*)	655	5th March 1870	George Elliot.
Machinery for holeing, cutting or excavating coal or other minerals. - - - - -	751	15th March 1870	Robert Winstanley, the younger. William Barker.
Improvements in apparatus for getting or cutting minerals, and in apparatus for compressing air.	815	19th March 1870	Alexander Morton Strathern.
Improvements applicable to winding engines for the prevention of winding over the headstocks, also applicable to other stationary engines where the weight is taken off suddenly.	1011	6th April 1870	James Sharrocks.
An improved machine for drilling or boring rocks, chiefly designed for working mines, tunnels and quarries, and for submarine operations. (*Communicated by James Asbury McKean.*)	1104	14th April 1870	William Robert Lake.
Machinery or apparatus for raising and lowering heavy bodies. (*for collieries.*)	1115	16th April 1870	John Craven.
An improved fuse - - - - (*for blasting.*)	1356	12th May 1870	John Frank Rogers.
Steam pumping or blowing engines - - (*Communicated by James Riley Maxwell and Ezra Cope.*)	1413	17th May 1870	Martin Benson.
An improved rock drilling machine - -	1466	20th May 1870	Hermann Osterkamp.
Machinery and arrangements for cutting or getting minerals.	1471	21st May 1870	George Simpson.
Motive-power engines - - - - (*mine pumping engines.*)	1504	24th May 1870	John Yule.
Ventilating mines - - - - -	1515	25th May 1870	Jonathan Wright Horsfall.
Compounds for insulating telegraph wires, the manufacture of flexible tubing and other like purposes. (*coating fuzes for blasting.*)	1626	4th June 1870	Daniel Spill.
Safety cages for mines and shafts - -	1653	8th June 1870	Edward Clarke. John Hughes.
An improved coating for safety fuzes used in mining.	1735	17th June 1870	William Bickford Smith.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MINING, &c.—*continued.*			
Improvements in mine cages, and in lifts for warehouses, hotels, and for other places, and in apparatus connected with the said cages and lifts.	1882	2nd July 1870	Charles Holcroft.
Apparatus for pumping and forcing air and other fluids, and which apparatus is peculiarly applicable to desiccating the ventilation of mines, buildings, ships and other structures, and for blast and other purposes.	1976	13th July 1870	William Cowley.
Improvements in pneumatic stamps and hammers, also applicable to machinery for driving piles, cutting, splitting or dressing stone, and for boring rocks.	2011	16th July 1870	William Husband.
Apparatus for warming, vaporising and causing a free circulation of fresh air in horticultural structures and other buildings, which apparatus is also applicable for the ventilation of mines and other places.	2038	20th July 1870	Ambrose Lloyd Taylor.
Apparatus for lubricating the axles of colliery "corves" or "tubs" when in motion.	2058	21st July 1870	Wilfred Creswick.
A machine for striking blows by hammers, and for drilling holes in rock, stone and other hard substances.	2170	4th Aug. 1870	Ingleby Thomas Miller.
Means or apparatus for supplying mines and other places with lighting gas. - - -	2217	10th Aug. 1870	George Huntriss. John Swinburn. James Wilson.
Machinery for compressing air - - - (*for rock drilling machines.*) (*Communicated by Charles Burleigh.*)	2258	13th Aug. 1870	Thomas Brown.
Improved apparatus for boring in rock, coal, mineral, slate and other similar substances. - (*for mining or quarrying.*) (*Communicated by Ferdinand Villepigue.*)	2316	23rd Aug. 1870	Martin Macdermott. Arthur David Williams.
Construction of miners' or safety lamps - -	2322	23rd Aug. 1870	James Allison Hogg.
Machinery or apparatus for tunnelling or forming galleries in mines, quarries and other places.	2349	26th Aug. 1870	Thomas Frederick Henley.
Mechanical telegraphs and liquid to be used therewith, which fluid is also applicable as a power transmitter for other purposes, for the making of liquid joints and other purposes where it is desirable to use a liquid that does not readily congeal or evaporate. - - - - (*for mines.*)	2384	1st Sept. 1870	Charles Henry Chadburn. William Chadburn.
Machinery for cutting coal and other minerals -	2387	1st Sept. 1870	Wordsworth Donisthorpe. William Leatham. George Edmund Donisthorpe.
Arrangements and mechanism for preventing or providing against accidents in winding or hoisting machinery used for mines and other purposes. - - - -	2447	10th Sept. 1870	William Barrow Turner. George Grey. Robert Brydon.
Manufacture of "brattice cloths" used in coal and other mines.	2490	15th Sept. 1870	Illius Augustus Timmis.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MINING, &c.—*continued.*			
Improvements in lamps and in the construction of lenses and reflectors. (*miners' safety lamps.*)	2529	20th Sept. 1870	James Couper, the younger. William Haden Richardson.
Motive-power engines (*for pumping mines.*)	2619	1st Oct. 1870	John Yule.
Improvements in condensing and cooling the smoke and products of combustion arising from steam boiler and other furnaces and in the apparatus employed therein. (*used in mining.*)	2670	8th Oct. 1870	Alfred Stansfield Rake.
Mode of training hops, the sockets for the poles or parts of same and other posts, applicable also for the boring for water. (*Communicated by Eduardo Blythe.*)	2705	13th Oct. 1870	David Munroe Childs.
Apparatus for shoreing or strutting earthworks, tunnels, shafts, buildings and other structures.	2709	14th Oct. 1870	Giardinelli Spooner Kirkman.
Mode of and machinery for tunnelling, mining and coal cutting.	2927	5th Nov. 1870	William Low.
Machinery or apparatus for preventing "overwinding" in mines, which invention is also applicable to hoists and for other similar purposes.	2997	16th Nov. 1870	James Landless.
Application of concrete to structures and foundations for the same, also to coffer dams. (*well sinking.*)	3039	21st Nov. 1870	James William Butler.
Miners' safety lamps	3106	26th Nov. 1870	Richard Brown.
Apparatus to be used in moving or transporting heavy bodies. (*in mines.*)	3110	26th Nov. 1870	Robert Anthony Hardcastle.
Improvements in condensing steam, in precipitating and reducing heat and smoke, and in apparatus therefor. (*in boilers used for mining.*)	3123	29th Nov. 1870	Matthew Burnett.
Machinery for drilling or boring rocks and other mineral substances in mining, tunnelling, quarrying and other like operations.	3131	29th Nov. 1870	Fenner Ballou Taylor.
Lamps (*for miners.*)	3209	6th Dec. 1870	Patrick Adie. William Simpson.
Improvements in the means for exhausting or charging receivers, principally applicable for working pneumatic tubes, for raising fluids and for exhausting steam in steam-engines, including particular arrangements of apparatus for carrying out these several objects. (*ventilating mines.*)	3255	12th Dec. 1870	Charles William Siemens.
Manufacture of non-inflammable brattice cloths	3348	22nd Dec. 1870	Oswald Brooke. Alfred William Read.

For colliery signals, *see* "SIGNALS."

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MIXING, MASHING, STIRRING, AGITATING.			
Machinery for cleansing and preparing gutta-percha, india-rubber and like substances. (*and for mixing.*)	41	5th Jan. 1870	Edwin Thomas Truman.
An improved vehicle or composition to be mixed with white lead and other pigments in lieu of linseed or boiled oil, turps and dryers to form paint.	164	19th Jan. 1870	John Axtell Deacon Cox.
Kneading and mixing machines - - -	331	5th Feb. 1870	William Whieldon.
Production of compounds containing xyloidine - (*mixing or stirring.*)	787	16th March 1870	Daniel Spill.
Improvements in the production of artificial fuel and in apparatus to be employed for such purpose. (*incorporating or mixing.*) (*Communicated by the Anthracite Fuel Manufacturing Company (Incorporated).*)	928	30th March 1870	John Henry Johnson.
An apparatus for the threefold purpose of curing or drying mealy and grainy stuffs, heating, cooling and mixing fluid substances and condensing gaseous ones.	1139	19th April 1870	Melchior Nolden.
Improvements in motive-power, and in machinery, apparatus or appliances to be used in connection therewith. (*mixing air and gas.*)	1537	27th May 1870	William Astrop.
Washing, churning and mixing machinery -	1539	27th May 1870	John Ingham Taylor.
Rag-engines - - - - - -	1633	6th June 1870	Daniel Bentley. John Broad Jackson.
An improved apparatus for mixing soils, chymical manures and other substances, either separately or together, and for mixing dry with semi-fluid substances, liquids or air. (*Communicated by Frederick Tolhausen.*)	1701	14th June 1870	Henry Hammond.
Process and apparatus for making soap - (*stirrers.*) (*Communicated by Moses Hyde and Francis Hyde.*)	1766	21st June 1870	Benjamin Joseph Barnard Mills.
Mode of manufacture of cloth - - - (*mixing shorts.*)	1791	23rd June 1870	Robert Hudson.
Machinery or apparatus for mixing and kneading dough and other ingredients, and for working the same into bread, biscuits and other pastry, and also applicable to other purposes. - -	1809	25th June 1870	Stephen Norris. Thomas Griffiths.
Apparatus for dyeing or otherwise treating yarns - (*agitating.*)	1840	28th June 1870	Thomas Paterson Miller. David Miller.
Improvements in machinery or apparatus and vessels for feeding, dusting, stirring, mixing or kneading flour and heating or boiling water or liquids for the manufacture of bread, biscuits, cakes, puddings, paste, buns, muffins, crumpits and other articles of food, which improvements are also applicable for beating and mixing, heating or boiling various ingredients or plastic substances, churning or other purposes.	1875	2nd July 1870	Ebenezer Stevens.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MIXING, &c.—*continued.*			
Apparatus to be employed in the preparation of pulverized clay used in the manufacture of tiles, bricks, pottery and other articles of earthenware or china. (*mixing clay, dust and spray.*)	2005	15th July 1870	Arthur Maw.
Improvements in bearings, packings for shafts, spindles, rods and other like pieces of machinery, and in materials employed in the manufacture of such bearings and packings. (*impregnating fibrous materials with plumbago, &c.*) (*Communicated by Eliza Dexter Murfey.*)	2663	7th Oct. 1870	John Henry Johnson.
Apparatus for drying and heating, amalgamating, moulding and compressing, more especially applicable to the manufacture of preserved coal.	2941	8th Nov. 1870	Henry Walker Wood.
Improved machinery or apparatus for mixing or compounding selenitic mortar, concrete and other cementitious substances or preparations.	3028	18th Nov. 1870	Henry Young Darracott Scott. Gilbert Richard Redgrave.
Machinery for preparing and washing wool and other fibrous materials, and for mixing and forming fur or materials for felt hat bodies.	3038	21st Nov. 1870	John Charles Edwards. John Taft.
Hydro-carbon lighting apparatus, chiefly designed for locomotives and signals. (*mixing chamber.*) (*Communicated by Myron Hopkins Strong, Thomas Barbour, Charles Cunningham Connor and Robert Barbour.*)	3061	23rd Nov. 1870	William Robert Lake.
Gas regulating apparatus (*Communicated by Myron Hopkins Strong, Thomas Barbour, Charles Cunningham Connor and Robert Barbour.*)	3062	23rd Nov. 1870	William Robert Lake.
An improved apparatus for mixing soils, chemical manures and other substances either separately or together, and for mixing dry with semi-fluid substances, liquids or air. (*Communicated by Frederick Tolhausen.*)	3213	7th Dec. 1870	Henry Hammond.
Treating certain mineral lubricating oils and paraffin (*combining caoutchouc with solid paraffine.*)	3261	13th Dec. 1870	Joseph James Coleman.
MOSAIC SLABS AND TESSERÆ.			
Manufacture of mosaic plaques or slabs suitable for external and internal decorations.	1744	17th June 1870	Colin Minton Campbell.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MOTIVE-POWER MACHINES; OBTAINING MOTIVE-POWER.			
I.—Air, Gas and Wind Engines and Mills; Pneumatic Motive-power.			
Improvements in apparatus for and in the treatment of liquid fuel and in the application thereof to prime movers.	194	22nd Jan. 1870	Johann Maximilian Plessner.
An improved windmill, which when divested of a portion of its regulating parts can also be used as a water-wheel or as a ship's propeller.	281	31st Jan. 1870	Charles Mahler.
An improved machinery for generating, obtaining and applying motive-power.	440	15th Feb. 1870	Abel Hureau de Villeneuve.
An improved pneumatic engine - - (*Communicated by John S. Morton.*)	511	21st Feb. 1870	William Robert Lake.
Windmills - - - - - (*Communicated by Edward Savoral.*)	551	24th Feb. 1870	William Edward Newton.
A new or improved rotary engine - -	584	28th Feb. 1870	Abraham Ripley.
An improved apparatus for producing rotary motion	615	2nd March 1870	Charles Ernest de Lorière.
Means for producing motive-power - - (*and packing.*)	1086	13th April 1870	Robert Mudge Marchant.
Combined high and low pressure steam and atmospheric engines. - - - - -	1251	2nd May 1870	Thomas Paton. Thomas Winder.
Construction of and methods of working gas engines. (*Communicated by Lars Albert Leonard Söderström and George Alexander Dick.*)	1352	11th May 1870	Edward Primerose Howard Vaughan.
Improvements in meters for measuring fluids and in packings and counting apparatus to be used therewith, parts of which improvements are applicable to engines for obtaining motive-power from fluids under pressnre and to other purposes.	1363	13th May 1870	Henry Law.
Steam and other valves - - -	1477	21st May 1870	Henry Hind. George Wells.
Improvements in motive-power, and in machinery, apparatus or appliances to be used in connection therewith. (*from carburetted hydrogen gas.*)	1537	27th May 1870	William Astrop.
Obtaining motive-power - - -	1697	5th July 1870	John Heaton.
Process of and apparatus for carburetting gases or atmospheric air so as to render the same applicable for lighting, heating or producing motive-power. (*Communicated by Emile Charles Maillet.*)	1967	12th July 1870	Bristow Hunt.
An improved wind engine or apparatus for obtaining and applying motive-power. - -	2033	19th July 1870	Charles Horton Plowright. William Plowright.
A new or improved application of atmospheric power to fixed locomotive and ascensional machines. (*Communicated by Alfred Francois Osselin.*)	2135	30th July 1870	William Edward Gedge.
Apparatus for compressing air and raising and forcing fluids. (*obtaining motive-power.*)	2224	10th Aug. 1870	Nicholas Demetrius Spartali.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MOTIVE-POWER, &c.—*continued.*			
Steam and gas engines	2383	1st Sept. 1870	Isham Baggs.
Steam, gas and air engine	2437	9th Sept. 1870	George Henry Ellis.
Improvements in steam, air and gas, and in fluid or hydraulic engines.	2554	23rd Sept. 1870	William Firth.
A new mode or apparatus for obtaining and applying motive-power. (*from compressed heated gas.*)	2884	2nd Nov. 1870	Otto Trossin.
Apparatus for cooling and refrigerating liquids, manufacturing ice and obtaining ammoniacal solution for the same and other purposes. (*obtaining power from ammoniacal gas.*)	2891	2nd Nov. 1870	Rees Reece.
Improvements in the construction of and in the methods of working gas engines. (*Communicated by Lars Albert Leonard Söderström and George Alexander Dick.*)	2959	10th Nov. 1870	Edward Primerose Howard Vaughan.
See also "GOVERNORS."			
II.—Steam-engines. (*Stationary, Locomotive and Marine.*)			
A new and improved system of constructing railroads with jaunting cars and posts and rail ways.	88	12th Jan. 1870	Henry Temple Humphreys.
Steam-engines applicable for marine and other purposes.	96	12th Jan. 1870	William Denison. Henry Teall.
Improvements in steam-engines and in the boilers and furnaces to be used therewith.	166	19th Jan. 1870	Edward Wood.
Steam-engines	179	20th Jan. 1870	William Lawrence Wildy.
Steam-engines	230	25th Jan. 1870	William Scott Underhill.
Motive-power engines and steam generators to be used therewith, suitable for domestic purposes. (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johnson.
Obtaining motive power by means of steam	311	2nd Feb. 1870	William John Hodge. John William Greayer.
Improvements in railways and in rolling stock to be used therewith.	388	10th Feb. 1870	Henry Temple Humphreys.
Slide valves	411	11th Feb. 1870	James Smart.
Improved safety apparatus for locomotives and brake wagons.	454	16th Feb. 1870	Laurence Hill.
Railways, tramways, common roads, and machines and vehicles to run thereon.	512	22nd Feb. 1870	William Bridges Adams.
A new and useful improvement in steam engines (*Communicated by Guillaume Marie Henri Audemar.*)	541	24th Feb. 1870	Henry Adrien Bonneville.
Steam-boilers and engines (*Communicated by Francis Brown Blanchard.*)	549	24th Feb. 1870	William Edward Newton.
Compound marine engines	559	25th Feb. 1870	Thomas Blackwood.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MOTIVE-POWER, &c.—*continued.*			
A new or improved rotary engine - - -	584	28th Feb. 1870	Abraham Ripley.
An improved apparatus for producing rotary motion.	615	2nd March 1870	Charles Ernest de Lorière.
Improvements in the application of power for the propulsion of vehicles on common roads or railways and in apparatus connected therewith. (*Communicated by Henri Adolphe Corbin.*)	664	5th March 1870	Alexander Melville Clark.
Certain improvements in elastic rolls or tubing for clothes wringers and various other purposes, as well as in machinery for manufacturing the same. (*using fibrous strands as packing for pistons.*)	786	16th March 1870	Joel Moulton.
An improved lubricating apparatus for lubricating the slide valves and cylinders of steam-engines.	829	21st March 1870	John Ferris.
An improved method of counteracting the pressure on the slide valves of steam or other engines. (*Communicated by William Myrtle Williams.*)	845	22nd March 1870	William Robert Lake.
Steam-engines - - - - - -	873	25th March 1870	Alexander Baumann.
Improvements in the valves of steam-engines and in the mechanism for operating the same. (*Communicated by George Enoch Noyes.*)	885	25th March 1870	William Robert Lake.
Lubricators - - - - - - (*for steam cylinders.*)	938	31st March 1870	Charles Dudley Austin.
Utilising exhaust steam - - - - (*preventing back pressure on the piston.*)	976	2nd April 1870	Joseph Shackleton.
Equilibrium valves - - - - -	977	2nd April 1870	Charles Wilson. John Peebles.
Improvements in steering gear, and in machinery for starting, stopping and reversing heavy steam-engines and turrets, and for discharging cargo.	1018	7th April 1870	Andrew Betts Brown.
Construction of agricultural road traction and portable steam-engines and tramway locomotives.	1037	8th April 1870	Thomas Aveling.
Rotary engines and pumps - - - -	1056	11th April 1870	George Henry Ellis.
Certain improvements in steam and other elastic fluid engines.	1063	12th April 1870	Robert Wilson.
Means for producing motive-power - - - (*and packing.*)	1086	13th April 1870	Robert Mudge Marchant.
Construction of engines worked by steam or other motive power. - - - - -	1098	14th April 1870	William Simpson. Alfred Gardner.
Steam engines - - - - - -	1131	19th April 1870	John Frederick Spencer. William Inglis.
An improved device for operating the throttle valve or regulator in locomotive engines and for other like purposes. (*Communicated by Henry Leffert Brevoort.*)	1145	19th April 1870	Alfred Vincent Newton.
Slide valves - - - - - -	1147	19th April 1870	James Grafton Jones. George William Elliott.
Condensers for marine steam-engines - - (*Communicated by John Houpt.*)	1152	20th April 1870	William Robert Lake.
Steam-engines - - - - - -	1212	27th April 1870	Eustace Wigzell. Joseph Pollit.
Construction of oscillating cylinder engines -	1216	27th April 1870	Henry Edward Curtis.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MOTIVE-POWER, &c.—*continued.*			
Combined high and low pressure steam and atmospheric engines.	1251	2nd May 1870	Thomas Paton. Thomas Winder.
Traction and locomotive engines (*Communicated by James K. Lake.*)	1270	3rd May 1870	Alexander Melville Clark.
Steam carriages for common road locomotion (*see* "CARRIAGES.") (*Communicated by Jean Baptiste Gabriel Marie Frederic Piret.*)	1273	3rd May 1870	Alexander Melville Clark.
Steam-engines (*Communicated by Messrs. Babcock and Wilcox.*)	1286	5th May 1870	William Robert Lake.
Rotary engines	1321	9th May 1870	Edwin Whitworth.
Steam-engines and boilers	1341	11th May 1870	Thomas William Wedlake.
Construction of steam valves or cocks (*Communicated by George Snowden Redfield, Edward Abraham Rock and James Seel Gill.*)	1357	12th May 1870	William Edward Newton.
An improved steam machine for agricultural work and land transport of every kind. (*Communicated by Jean Baptiste Honoré Petitpierre.*)	1365	13th May 1870	William Edward Gedge.
Manufacture of bearings, slides and packings for steam-engines and other machinery. (*Communicated by Eliza Dexter Murfey.*)	1401	16th May 1870	John Henry Johnson.
Steam pumping or blowing engines (*Communicated by James Riley Maxwell and Ezra Cope.*)	1413	17th May 1870	Martin Benson.
Steam-engines (*Communicated by Benoit Louchart.*)	1444	19th May 1870	William Edward Gedge.
Construction and arrangement of valves for regulating the supply or discharge of steam, water and other fluids.	1472	21st May 1870	Thomas Holt Lloyd.
Improvements in the construction of tramways, and in engines and carriages employed thereon.	1475	21st May 1870	Edward Ellis Allen.
Steam and other valves	1477	21st May 1870	Henry Hind. George Wells.
Motive-power engines	1504	24th May 1870	John Yule.
An improvement in steam-engines	1550	27th May 1870	James Cope.
An improved arrangement of reversing and expansion gear for steam-engines.	1646	7th June 1870	Thomas Aveling. Henry Rawlinson.
Improvements in steam and other vessels and in steam-engines, steam-boilers and propellers applicable thereto, parts of which improvements are adapted for other purposes. (*Communicated by James Montgomery.*)	1691	11th June 1870	Benjamin Joseph Barnard Mills.
Slide valves	1707	14th June 1870	George Weir. James Weir.
Rotary engines	1761	21st June 1870	James Outram.
Valves applicable to steam or water pressure	1768	21st June 1870	Thomas Common Brown.
Improvements in railways and in the engines and carriages to run thereon. (*Communicated by Francois Maurice Maria.*)	1771	21st June 1870	John Henry Johnson.
Locomotive steam-engines	1778	22nd June 1870	James Reid.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MOTIVE-POWER, &c.—*continued.*			
Rotary engines	1779	22nd June 1870	Thomas Graham. Thomas Dixon.
New or improved constructions and arrangements of valves and their actuating parts, and their application to steam-boilers and engines, suitable also for other purposes.	1815	27th June 1870	David Rowan.
Steam-engines	1818	27th June 1870	Vincent Rastonin.
Means of producing and regulating motive-power	1859	30th June 1870	John Bourne.
Improvements in means or apparatus for measuring the flow or passage of liquids, which improvements are also applicable to obtaining motive-power.	1883	2nd July 1870	George Scott. Henry Young.
Condensers for steam-engines	1968	12th July 1870	John Walker McCarter.
Counting registers applicable to counting the revolutions of shafts in various kinds of machinery, steam and other engine indicators, for registering stroke or travel indicators for gas or water meters, clocks, adding machines and registering devices of different kinds or for various purposes. (*Communicated by William Henry McNary.*)	1988	14th July 1870	William Edward Newton.
Steam-engines	1989	14th July 1870	James Humphrys.
Rotary engines	2010	15th July 1870	Richard Dudgeon.
Rotary engines	2086	23rd June 1870	Bertie Charles Scott.
Steam-engines	2168	3rd Aug. 1870	George Warsop.
Steam-engines	2184	5th Aug. 1870	Max Eyth.
Means and apparatus for working brakes for the rolling stock of railways and tramways, as also for working feed-water pumps in connection therewith. (*Communicated by George Westinghouse, junior.*)	2235	11th Aug. 1870	Charles Denton Abel.
Rotary engines	2277	17th Aug. 1870	Charles Menzies Holland.
Improvements in motive-power engines, which improvements are also in part applicable as brakes and dynamometers.	2285	18th Aug. 1870	Thomas Ivory.
Certain improvements in diminishing valves for steam and other purposes.	2315	23rd Aug. 1870	Squire Farron.
Steam-engines	2380	31st Aug. 1870	William Rudd Oswald. William Kenmire Swaddle.
Steam and gas engines	2383	1st Sept. 1870	Isham Baggs.
Steam, gas and air engines	2437	9th Sept. 1870	George Henry Ellis.
Cut-off valve gear for steam-engines (*Communicated by Daniel Frank Mosman.*)	2528	20th Sept. 1870	David Hunter Brandon.
Improvements in steam, air and gas and in fluid or or hydraulic engines.	2554	23rd Sept. 1870	William Firth.
An improved lubricating apparatus for lubricating the slide valves and cylinders of steam-engines.	2558	23rd Sept. 1870	John Pardoe Ferris.
Locomotive engines and tenders	2588	29th Sept. 1870	Robert Elsdon.
New or improved modes of and means or apparatus for utilizing the power and heat of the steam used in motive-power engines and for other purposes. (*Communicated by Treat Timothy Prosser.*)	2608	1st Oct. 1870	William Richard Middlemore Thomson.
Working of locomotive engines	2612	1st Oct. 1870	Joseph Ward.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MOTIVE-POWER, &c.—*continued.*			
Motive-power engines	2619	1st Oct. 1870	John Yule.
Direct-acting steam-engines	2657	7th Oct. 1870	Herbert Vosper.
Steam-engines (*Communicated by John Houpt.*)	2678	10th Oct. 1870	William Robert Lake.
Single cylinder steam or other motive-power engines	2684	11th Oct. 1870	James Shand.
Production of motive-power and appliances connected therewith.	2729	17th Oct. 1870	George Bell Galloway. George Thomas Galloway.
New or improved constructions of elastic and flexible metallic or composite packings for the stuffing boxes and other working and jointing parts of steam-engines and machinery.	2760	20th Oct. 1870	William Paton.
Steam-engines	2871	1st Nov. 1870	William Dawes.
Machinery and apparatus for tilling land by steam and for other purposes.	2904	3rd Nov. 1870	Samuel Oram.
Improved methods of and apparatus for utilising the waste and spare or live steam, waste and spare heat, and waste and spare momentum of locomotive and other steam-engines.	2906	3rd Nov. 1870	Thomas Arthur Dillon.
An improved steam machine for agricultural work and land transport of every kind. (*Communicated by Jean Baptiste Honoré Petitpierre.*)	2964	4th Nov. 1870	William Edward Gedge.
Certain improvements in engines worked by steam and other elastic fluids, and in valves.	3176	3rd Dec. 1870	George Holcroft. William Nathan Dack.
Portable and other steam-engines	3186	3rd Dec. 1870	Edward Rush Turner.
Application of engine and other power to duplicate machines connected by a side rod.	3244	10th Dec. 1870	John Cooke.
Slide valves for steam and other engines	3336	21st Dec. 1870	Joseph Crichton Black.
Construction of equilibrium slide valves	3350	22nd Dec. 1870	Francis Jackson.
Improvements in the slide valves of steam and other motive-power engines, and in apparatus connected therewith.	3355	22nd Dec. 1870	James Marshall. William Bishop Harding.
Improvements in machinery for stamping and breaking ores and separating the same from substances with which they may be combined, parts of which improvements are also applicable in the construction of steam hammers and steam-engines.	3357	23rd Dec. 1870	James Willoughby. William Willoughby. Joseph Willoughby. Samuel Willoughby.
See also "GAUGES." "GOVERNORS."			
III.—Water-wheels and Engines; Hydraulic Motive-power.			
An improved windmill, which when divested of a portion of its regulating parts can also be used as a water-wheel or as a ships' propeller.	281	31st Jan. 1870	Charles Mahler.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MOTIVE-POWER, &c.—*continued.*			
An improved method of and apparatus for producing and utilizing a fall of water. (*turbine or hydraulic motor.*) (*Communicated by Doctor Heiman Sanders-Ezn.*)	557	25th Feb. 1870	William Robert Lake.
A new or improved rotary engine - -	584	28th Feb. 1870	Abraham Ripley.
Turbine water wheels - - - (*Communicated by Henry Allen Chadwick.*)	870	24th March 1870	William Robert Lake.
Improvements in steering gear and in machinery for starting, stopping and reversing heavy steam-engines and turrets, and for discharging cargo. (*hydraulic apparatus.*)	1018	7th April 1870	Andrew Betts Brown.
Improved means or apparatus for obtaining motive-power.	1223	28th April 1870	James Lee.
Valves applicable to steam or water pressure -	1768	21st June 1870	Thomas Common Brown.
Steam-engines - - - - (*hydraulic engines.*)	1818	27th June 1870	Vincent Rastouin.
Obtaining motive-power from a fall of water -	2177	4th Aug. 1870	Joaquim Antonio de Macedo.
Machinery or apparatus for obtaining and applying motive-power from the rise and fall of the tides. - - - - -	2216	10th Aug. 1870	Thomas Stephens. Charles Stephens.
Improvements in steam, air and gas, and in fluid or hydraulic engines.	2554	23rd Sept. 1870	William Firth.
See also "GOVERNORS."			
IV.—Electro and Electro-magnetic Motive-power.			
Improvements in electro-magnets and the application of the same for obtaining motive-power. (*Communicated by Henry Monroe Paine and Mahlon Smith Frost.*)	17	3rd Jan. 1870	William Edward Newton.
An improved electro-motor for sewing machines - (*see* "PROPELLING.") (*Communicated by Gustave Henry Dervieu.*)	207	22nd Jan. 1870	Alexander Melville Clark.
An improved apparatus for producing rotary motion.	615	2nd March 1870	Charles Ernest de Lorière.
An electro-magnetic motor for sewing and other machines. - - - -	1555	27th May 1870	George Stevens. Joshua Hendy.
Electro-magnetic engines - - -	1576	30th May 1870	John Fletcher Wiles.
A new or improved electro-magnetic apparatus for moving panoramas, advertisements or other things required to be exhibited. (*Communicated by Louis Finger.*)	1584	31st May 1870	Bristow Hunt.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MOTIVE-POWER, &c.—*continued.*			
V.—Mechanical Motive-power; Horse-power.			
A new lever for changing alternate rotary motion into continuous rotary motion and vice versâ. (*Communicated by Joseph Julien Chenal.*)	149	18th Jan. 1870	Henry Woodcroft Hammond.
Improvements in apparatus for and in the treatment of liquid fuel, and in the application thereof to prime movers.	194	22nd Jan. 1870	Johann Maximilian Plessner.
Apparatus for producing rotary motion - - (*Communicated by Addison Goodyear Waterhouse.*)	279	31st Jan. 1870	William Robert Lake.
An improved apparatus for producing rotary motion	615	2nd March 1870	Charles Ernest de Lorière.
A new or improved motive-power engine - -	629	3rd March 1870	John Stuart Johnstone.
New or improved motors or motive-power mechanism or machines for obtaining and transmitting motive power.	832	21st March 1870	John Millar.
Apparatus for producing motive-power - -	850	22nd March 1870	Charles James Eyre.
Apparatus for producing and applying motive-power. (*spring power.*) (*Communicated by John Madison Cayce, Wiley Blount Barfield and James McEwen.*)	2890	2nd Nov. 1870	Alexander Melville Clark.
Apparatus for producing motive-power - -	2993	15th Nov. 1870	Thomas Hitchcock.
A new system for constructing iron ships of war, &c., to be impervious to shot, combined with the true and only method for production and resistance of ram power.	3231	9th Dec. 1870	Edmund Beatty Lockyer.
MOULDINGS AND ARCHITECTURAL ORNAMENTS.			
Improved machinery for cutting, dressing or working stone. (*cutting profiles or mouldings.*) (*Communicated by Carl Friedrich Schlickeysen.*)	327	4th Feb. 1870	Henry Edward Newton.
An improved method of preparing or treating cements for the purpose of rendering them applicable for the production of artificial stone and architectural ornaments. (*Communicated by Robert Parish Busk.*)	998	5th April 1870	Charles James Busk.
Improvements in planes for chamfering and moulding and in means connected with their use.	1291	5th May 1870	Frederick Hart.
A new or improved system of grooves for rolling and shaping iron or other metals. (*forming mouldings.*) (*Communicated by Pierre Michel Sibut, senior.*)	1553	27th May 1870	William Edward Gedge.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MOULDINGS, &c.—*continued.*			
Improvements in machinery for corrugating and moulding sheet metal, which improvements are also applicable for other purposes. (*making mouldings.*) (*Communicated by Asa Johnson and William Thornton Still.*)	1566	28th May 1870	Alexander Melville Clark.
Means and apparatus for cutting type, and carving, moulding and ornamenting wood, metal, stone and other materials.	1776	22nd June 1870	William John Cunningham. Alphonso Dabb.
Machinery for cutting or shaping wood (*cutter blocks of moulding machines.*)	3029	18th Nov. 1870	Allen Ransome.
Preparing and applying slate to useful and ornamental purposes. (*for decorating buildings, cornices, skirtings, &c.*)	3275	14th Dec. 1870	William Boggett.
MUSICAL INSTRUMENTS AND NOTATION; TURNING OVER LEAVES OF MUSIC; MUSIC STOOLS, DIGITORIUMS.			
A new or improved means of securing or fastening the leaves in music, periodicals and books, applicable for securing together papers of various kinds and samples and patterns.	191	21st Jan. 1870	Franklin Hocking.
Organs	369	8th Feb. 1870	John Pinney.
Apparatus for turning over the leaves of music books, which apparatus is applicable to pianofortes, organs, harmoniums, music stands and similar articles.	612	2nd March 1870	Herbert Crowther.
Upright pianoforte actions	766	15th March 1870	George Henry Brockbank.
Improvements in jacquard mechanism for weaving and other purposes, parts of which improvements are also applicable for playing musical instruments.	838	21st March 1870	Alfred Barlow.
Concertinas and accordions (*Communicated by Reinhard Doerfel.*)	929	30th March 1870	Alexander Stiefbold. George Nicholas Cory.
Construction of pianofortes	1035	8th April 1870	Henry John Kirkman.
Musical instruments	1214	27th April 1870	Eugene Vimeux.
Improvements in writing music and in the apparatus employed therefor.	1339	11th May 1870	Alexandre Amédée Rossignol.
Hinges (*for pianos.*)	1630	6th June 1870	William McLean.
Construction of cabinets, stands or receptacles for sewing-machines. (*form or shape of pianofortes, &c.*) (*Communicated by Messrs. Pollack, Schmidt and Company,*)	1677	9th June 1870	Johannes Heinrich Ludwig Theodor Pörtner.
Harmoniums and other reed instruments of music (*Communicated by George William Scribner*).	1722	16th June 1870	Edwin C. Rolls.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
MUSICAL INSTRUMENTS, &c.—*continued.*			
Machinery or apparatus for reducing wood, metal, or other hard material to fixed patterns. (*piano action rods.*) (*Communicated by Frederick Baldwin.*)	1987	14th July 1870	Giovanni Sconcia.
Manufacture of free-reed musical instruments -	2150	2nd Aug. 1870	Alexandre François Debain.
An improved notation to be employed in facilitating the teaching of music.	2345	26th Aug. 1870	George Edward Morgan.
Construction of harmoniums - - -	2479	14th Sept. 1870	Samuel Rolfe.
Improved means of and apparatus for turning over the leaves of music and other books.	2928	5th Nov. 1870	George Dominy.
Holders and portfolios for holding or filing music and other sheets, and for other like purposes.	2971	11th Nov. 1870	Frederick Brampton.
An improved action for pianofortes - -	3063	23rd Nov. 1870	William Glen Eavestaff.
Certain improvements in castors for furniture and other purposes. (*for pianofortes.*)	3068	23rd Nov. 1870	Richard Banton.
Action of pianofortes - - - - -	3128	29th Nov. 1870	Thomas Lambert.
Pianofortes - - - - -	3150	1st Dec. 1870	Henry Lockhart Gleig.
Pianofortes - - - - - -	3157	1st Dec. 1870	Alfred Nicholson Wornum.
Organs - - - - - - -	3279	14th Dec. 1870	Charles Kenwrick Kenelm Bishop.
Improvements in that class of musical instruments called "American organs." - - - -	3353	22nd Dec. 1870	James Leyster Courtice. Frank Webb.
Certain improvements in the method of preparing and in the means of producing and printing musical notation, and the words, signs, marks and devices employed therewith.	3369	24th Dec. 1870	John Lacey Davies.
NAILS, SPIKES, BOLTS, RIVETS, SCREWS, NUTS, WASHERS AND DIES; ANGLE IRON, T IRON, BRACKETS.			
Apparatus for hinging, adjusting and fastening gas retort lids, covers or doors, and other lids, covers and doors. (*differential pins or bolts.*)	3	1st Jan. 1870	Stephen Holman.
Bolts for securing parts of the permanent way of railways. - - - - -	93	12th Jan. 1870	Louis Sterne. James Godfrey Warner.
Improvements in the construction of ships or vessels and in bolts and nuts for fastening the parts together, also in the construction and employment of apparatus to be applied to such ships or vessels to assist in steering and propelling them through intricate channels.	237	26th Jan. 1870	Charles Lungley.
Nails for coffins, articles of furniture and other uses	310	2nd Feb. 1870	Alfred William Theophilus Baker.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
NAILS, &c.—*continued.*			
Improvements in the manufacture of twisted metal bars to form augers and drills, and an improved composite machine for twisting such augers and drills for screw cutting and for cutting metal rods, bars and tubes. (*Communicated by Monsieur Jean Boulay.*)	404	11th Feb. 1870	Martin Macdermott. Arthur David Williams.
Machinery for making horseshoe nails (*Communicated by Daniel Dodge.*)	533	23rd Feb. 1870	Alexander Melville Clark.
Machinery for manufacturing nails (*Communicated by Daniel Reed, Royal Moulton Bassett and Theodore Sheldon Bassett.*)	544	24th Feb. 1870	Edward Thomas Hughes.
Machinery for manufacturing screws (*Communicated by Jared Augustus Ayres.*)	563	25th Feb. 1870	Alfred Vincent Newton.
Machinery or apparatus for heating and delivering metal bars. (*for bolts, &c.*) (*Communicated by Samuel A. Darrach.*)	887	26th March 1870	Albert Angell.
Improved machinery for making horseshoe and other nails. (*Communicated by Sebastien Schlesinger.*)	973	2nd April 1870	William Edward Newton.
Constructing and fitting brackets for shop windows and other purposes.	974	2nd April 1870	John Richard Cadman.
Tube cutters and screw stocks	978	2nd April 1870	Henry James Taylor Piercy.
Machinery used in the manufacture of tacks and other similar nails.	1036	8th April 1870	George Baker.
Machinery for cutting heel and sole pieces or other forms of leather. (*washers, rivetting pieces, &c.*)	1166	21st April 1870	James Thomas Sheppard.
Certain improvements in the manufacture of spikes	1188	23rd April 1870	Moses Bayliss.
Manufacture of cross-headed nails, screw rings and rivets.	1250	2nd May 1870	Edwin Lowe. Henry John Farnol.
Means or method of securing or locking screw bolts and nuts. (*see* "RAILWAYS.") (*Communicated by Robinson Rutter.*)	1323	9th May 1870	Bristow Hunt.
Locking screw bolts and nuts	1328	10th May 1870	Henry Johnson. Robert John Lecky.
Locking or securing nuts for screw bolts employed for railway or other purposes.	1348	11th May 1870	Edwin Smith.
Improved machinery for pointing and finishing nails (*Communicated by Sebastien Schlesinger.*)	1351	11th May 1870	William Edward Newton.
Improvements in rolling metallic rods or wire, and in machinery employed for that purpose. (*for horseshoe nails.*)	1454	19th May 1870	James Partridge Blake.
Securing the nuts of the screw bolts used in fish-jointing the rails of railways.	1465	20th May 1870	William Barwell. George Bond Smith.
Machinery for cutting wood screws and slot-bolts (*Communicated by Louis André de Coster, Joseph Michel Melany and Edward Casper.*)	1519	25th May 1870	Alexander Melville Clark.
An improved machine for making cut-nails	1597	2nd June 1870	Henry Scheuerle. Daniel Gugisperg. Carl Scheib.
Securing bolts and nuts	1702	14th June 1870	William Moore.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
NAILS, &c.—*continued.*			
Improvements in steel washers and in apparatus employed for forming the same. (*Communicated by William Butcher and George Whitfield Billings.*)	1724	16th June 1870	William Robert Lake.
Improved mode and means for the indenting of iron for shoe heel tips. (*forming nail heads.*)	1732	17th June 1870	George Farmer, the younger.
Improvements in making wooden skewers and in the machinery, apparatus and means to be employed therein. - - - - -	1825	27th June 1870	Joseph Butterworth. John Backhouse Hutchinson.
Wood screws - - - - - -	1847	29th June 1870	George Colin Davies.
Manufacture of certain ornamental and useful articles, such as buttons, studs or other attachments for dress, knobs for doors and drawers, chair nails, harness mounts, and for various other purposes analogous to these. - -	1902	5th July 1870	John William Hoffman. Frederic Arthur Harrison.
Manufacture of nails and spikes - -	1956	11th July 1870	Thomas Holcroft.
Improvements in screws and screwdrivers and in machinery for the manufacture of screws.	1971	12th July 1870	John Frearson.
Machinery or apparatus for reducing wood, metal or other hard material to fixed patterns. (*railway trenails.*) (*Communicated by Frederick Baldwin.*)	1987	14th July 1870	Giovanni Scoucia.
Machinery for making railway and other spikes or bolts.	2023	18th July 1870	Jacob Walker.
Machinery for washing or scouring wool and other fibrous materials. (*prongs or spikes of lifting cylinders.*)	2060	21st July 1870	John Petrie, junior.
Manufacture of twisted metal bars to form augers and drills, and an improved composite machine for twisting such augers and drills and for cutting screws. - - - - - (*Communicated by Jean Boulay.*)	2220	10th Aug. 1870	Martin Macdermott. Arthur David Williams.
An improved washer for locking screw nuts on their bolts. (*Communicated by William Hunter Van Cleve.*)	2274	17th Aug. 1870	William Robert Lake.
Manufacture of tacks and nails - - - (*Communicated by Howell Woodbridge Wright.*)	2359	27th Aug. 1870	William Robert Lake.
Ground or earth screws - - - - (*see* "PILE-DRIVING.")	2466	13th Sept. 1870	George Wells.
Machinery for tapping nuts for screw bolts -	2559	23rd Sept. 1870	Philippe Kock.
Machinery and tools for pressing washers, bucket cars, box clips and similar articles out of sheet metal. - - - - -	2563	24th Sept. 1870	George Price. George Arthur Price.
An improved machine for tapping or forming the threads in metallic nuts. (*Communicated by Bradford Howland and Edward Fitch.*)	2628	3rd Oct. 1870	George Haseltine.
Improvements in the manufacture of boots and shoes or other coverings for the feet, parts of improvements are also applicable in the manufacture of mills traps or bands, harness, hose pipes and other similar articles, and in the machinery, apparatus or means to be used for effecting such purposes. (*driving rivets by machinery.*)	2698	12th Oct. 1870	Thomas White.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
NAILS, &c.—*continued.*			
Machinery for the manufacture of nails - -	2711	14th Oct. 1870	James Lockwood Heward.
Improved machinery for pointing nails - (*Communicated by Lawrence Barnes.*)	2899	3rd Nov. 1870	William Edward Newton.
Means or method of securing or locking screw bolts and nuts. (*see* "RAILWAYS.") (*Communicated by Robinson Rutter.*)	2950	9th Nov. 1870	Bristow Hunt.
Improvements in rivets and in rivetting metal plates together.	2984	14th Nov. 1870	William Ord.
Improvements in the manufacture of steel horse-shoe nails and in machinery employed therefor. (*Communicated by Henry Mulholland.*)	3018	17th Nov. 1870	George Haseltine.
Improved means for securing screw nuts and keys or wedges. (*washers or substitutes.*) (*Communicated by Alexander Campbell.*)	3064	23rd Nov. 1870	Alfred Vincent Newton.
Machinery for forging or manufacturing untapped nuts intended for screw bolts.	3095	25th Nov. 1870	John Whittaker.
An improved method for "securing" the nuts on bolts.	3259	13th Dec. 1870	John Kenyon.
Apparatus for preventing nuts working loose in reaping and mowing machines and other machines or apparatus. (*Communicated by Walter A. Wood.*)	3344	21st Dec. 1870	James Theodore Griffin.
Improvements in wood screws and in machinery employed in the manufacture thereof. (*Communicated by George Colin Davies.*)	3381	28th Dec. 1870	John Thomson King.
OIL-CLOTHS, FLOOR-CLOTHS, TABLE-COVERS AND FURNITURE-COVERS; RICK-CLOTHS AND WAGGON-COVERS.			
Ornamenting surfaces - - -	137	17th Jan. 1870	Frederick Samuel Lines.
Improvements in ornamenting woven and felted fabrics and in apparatus employed therein. - (*for table-covers and furniture covers.*)	210	22nd Jan. 1870	John William Eyres. John Longbottom.
Protecting goods, wares or stock in railway and other trucks, waggons or vehicles and buildings.	951	31st March 1870	William Robert Mowbray. John Martin.
Improved methods of forming patterns on the surface of kamptulicon or other similar substances used for floor coverings and mats.	1097	14th April 1870	George Spencer.
Manufacture of toilet quilts, toilet or table covers, quiltings and the like articles.	1424	18th May 1870	George Hodgkinson.
Improvements in rick cloths or covers and in apparatus for supporting rick cloths or covers.	1606	3rd June 1870	Ephraim William Hodgetts.
Certain improvements in canopies - - (*Communicated by Augusta Margaretta Rodgers.*)	2097	26th July 1870	Henri Adrien Bonneville.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
OIL-CLOTHS, &c.—*continued.*			
Thatch-making machinery - - -	2219	10th Aug. 1870	Osborne Reynolds.
Improved machinery for preparing and printing floor-cloths.	2749	19th Oct. 1870	John Wright.
An improved mode of colouring india-rubber and other like waterproof fabrics or materials. (*oiled or waxed cloth.*)	2761	20th Oct. 1870	Alfred Ford.
An improved expanding and contracting canopy applicable to omnibuses, furniture vans and other uses.	2792	24th Oct. 1870	Joseph Ellisdon.
Method of charging oil seed presses and the apparatus and envelopes therein employed.	3074	24th Nov. 1870	William Lomas Joy.
Improvements in engraved or ornamented blocks or plates, in the mode or method of producing the same and in the apparatus or mechanism employed therein, which apparatus is also applicable to other useful purposes. (*for oil-cloths.*) (*Communicated by Claus Van Haagen.*)	3366	24th Dec. 1870	John Henry Johnson.
Improvements in the manufacture of felted fabrics and in the machinery or apparatus employed therein. (*for table-covers.*) (*Communicated by Robert Spencer.*)	3404	31st Dec. 1870	William Edward Newton.
OILING OR LUBRICATING; MATERIALS FOR OILING; OIL-CANS AND LUBRICATORS.			
Obtaining products from mineral and vegetable tars and from certain of their distillates and residues. (*obtaining lubricating oil.*)	50	6th Jan. 1870	George Shand.
Wool combing and drawing machinery - - (*economising oil.*)	151	18th Jan. 1870	Thomas Whitehead.
Certain improvements in carding engines - (*lubricating.*)	174	20th Jan. 1870	William Noton.
An improved apparatus for lubricating parts of locomotive and other engines. (*Communicated by Pierre Freitel.*)	218	24th Jan. 1870	William Edward Gedge.
Improvements in the construction of axle boxes for railway, tramway and other similar engines, carriages and trucks, and an improved method of lubricating the axles in such boxes. -	238	26th Jan. 1870	James Bingham Alliott. Alfred Hardy Sellers.
Lubricators - - - - -	467	17th Feb. 1870	Charles Dudley Austin.
Improved means of oiling the bearings and journals of revolving shafts, spindles and pins of reaping and mowing machines. (*Communicated by Walter Abbott Wood.*)	635	3rd March 1870	James Theodore Griffin.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
OILING, &c.—*continued.*			
An improved lubricating apparatus for lubricating the slide valves and cylinders of steam-engines.	829	21st March 1870	John Ferris.
Lubricators	938	31st March 1870	Charles Dudley Austin.
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation and preserving wood and other materials. (*also as a lubricant.*)	986	4th April 1870	Achille Thomas-Anquetil.
Apparatus for lubricating and covering the spindles employed in machinery for preparing, spinning, doubling and winding fibrous materials.	1059	11th April 1870	John Billington Booth.
Construction of reaping and mowing machines (*lubricating the pin of the crank wheel.*)	1161	21st April 1870	William Arundell Oatey.
Improvements in apparatus for preventing railway carriages running off the line, in wheels for enabling them to pass round curves, in operating points or switches automatically, and in securing rails to chains or supports.	1269	3rd May 1870	John Tiranoff.
Apparatus for feeding wool, cotton or other fibrous materials to carding or other machines. (*lubricating the fibrous materials.*)	1484	23rd May 1870	Philip Charles Evans. Henry James Hogg King.
Ropes and cables (*oiling the centre yarns.*)	1507	24th May 1870	Robert Henry Pounds.
Slide valves (*lubricating.*)	1707	14th June 1870	George Weir. James Weir.
Improvements in axle boxes and in means of securing the same upon the axle.	1747	17th June 1870	Ebenezer Partridge.
Treating or preparing certain lubricating oils	1752	18th June 1870	John Orr Ewing. Joseph James Coleman.
An improved compound for the lubrication of wool and other similar animal material in their processes of manufacture.	1753	18th June 1870	John James Lundy.
Improvements in treating and distilling petroleum and in apparatus employed therein. (*lubricating oil.*) (*Communicated by James Laws Heverin and James Lloyd Bewley.*)	1823	27th June 1870	Robert Kell.
Journal bearings and axle boxes chiefly designed for carriages or vehicles running upon rail and tram ways. (*Communicated by George Franklin Lynch.*)	1880	2nd July 1870	William Robert Lake.
Certain new and useful improvements in oil cabinets.	1954	9th July 1870	Moses Henry Wiley.
An improved lubricator	1985	14th July 1870	James Abercrombie.
Railway and other wheels	2031	19th July 1870	William Owen.
Apparatus for lubricating the axles of colliery "corves" or "tubs" when in motion.	2058	21st July 1870	Wilfred Creswick.
Lubricators (*Communicated by David Adamson.*)	2138	1st Aug. 1870	Charles Frederic Trelawny Young.
Improved lubricating packing for railway carriage journals. (*Communicated by William Henry Jewell.*)	2153	2nd Aug. 1870	William Robert Lake.
Preparation of lubricating oil	2259	13th Aug. 1870	Henri Corneille de Blende.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
OILING, &c.—*continued.*			
Improved methods of effecting the lubrication of and exclusion of dust from carriage axle journals and other bearings and in apparatus or mechanical devices employed therefor. (*Communicated by Ernest Von Jeinsen and James Monroe McDonald.*)	2294	19th Aug. 1870	William Robert Lake.
Certain improvements in sewing machines (*regulating and supplying lubrication.*)	2301	20th Aug. 1870	Arthur Isaac Maxfield.
Improvements in reaping and mowing machines, parts of which improvements are also applicable to other purposes.	2329	24th Aug. 1870	William Goulding. Austin Hill.
An improved construction of lubricator (*Communicated by William Gee.*)	2419	6th Sept. 1870	Alfred Vincent Newton.
Floating dredgers or machinery for loosening, raising, transporting and depositing sand, gravel and mud. (*Communicated by James Burt.*)	2438	9th Sept. 1870	Thomas Burt.
An improved lubricating apparatus for lubricating the slide valves and cylinders of steam-engines .	2558	23rd Sept. 1870	John Pardoe Ferris.
Working of locomotive engines	2612	1st Oct. 1870	Joseph Ward.
Machinery for preparing, spinning, winding and doubling cotton and other fibrous materials, partly applicable to lubricating upright shafts.	2700	13th Oct. 1870	Robert Lakin. William Henry Rhodes. John Carpenter.
Construction of self-lubricating hubs or bosses for pulleys and wheels.	2704	13th Oct. 1870	David McColley Weston.
Manufacture of oil and other products of petroleum (*for lubricating.*) (*Communicated by Charles Toppan.*)	2762	20th Oct. 1870	William Robert Lake.
Automatic lubricators	2797	24th Oct. 1870	Ernest Von Jeinsen.
An improved compound for the lubrication of wool and other similar animal material in their processes of manufacture, and in preventing and arresting the combustion of such materials.	2810	25th Oct. 1870	John James Lundy.
Improvements in the axles of railway and tramway carriages and in apparatus to be employed in combination therewith. (*economizing lubricating material.*) (*Communicated by Henry Graham Thompson.*)	2925	5th Nov. 1870	John Garrett Tongue.
Improved compound lubricating oils	2976	12th Nov. 1870	Miles Williams. John Lamb.
Lubricating apparatus for upright and other runners and bearings.	3026	18th Nov. 1870	William Cunningham.
Bearings for carriage axles (*Communicated by William Henry Downs and Jethro Pencille.*)	3058	22nd Nov. 1870	Alfred Vincent Newton.
Axles and axle boxes for wheeled vehicles (*Communicated by Ernest Von Jeinsen and James Monroe McDonald.*)	3165	2nd Dec. 1870	William Robert Lake.
Lubricators	3198	6th Dec. 1870	Thomas Ramsden Shaw. Sydney Boardman.
Treating certain mineral lubricating oils and paraffin	3261	13th Dec. 1870	Joseph James Coleman.
An improved lubricating composition and apparatus for applying the same.	3339	21st Dec. 1870	Thomas Hopes.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
OILS FROM SEEDS, ANIMAL AND VEGETABLE OILS, FATTY AND OILY MATTERS.			
Refrigerating for the manufacture of ice and other purposes. (*solidifying tallow.*)	267	29th Jan. 1870	Henry Joseph West.
Machinery or apparatus for preparing lard (*see* "PRESERVING FOOD.")	338	5th Feb. 1870	William Thomas Shaw.
Treatment of cod-liver, castor and other medicinal oils in order to render the same more palatable.	819	19th March 1870	George Wakefield Fox.
Improvements in the utilization of a certain material obtained in treating cotton seed and in machinery employed therein. (*after removing the oil-yielding portions.*)	997	5th April 1870	Thomas Rose. Robert Emerson Gibson.
An improved process for cleaning wool and separating the grease therefrom.	1123	18th April 1870	Paul Toepler.
Treatment of maize (*producing oil.*) (*Communicated by H. Cavayé and Company.*)	1288	5th May 1870	John Henry Johnson.
A new and improved medicinal preparation of cod-liver oil called cod-liver-oil-jelly.	1414	17th May 1870	James Agnew.
Treating vegetable oils	1452	19th May 1870	James Baird.
Converters for the manufacture of steel and other metals, refining oil and other liquids.	1528	26th May 1870	James Webster.
An improved thermo-press (*for extracting oil from grain.*)	1558	27th May 1870	Ferdinand Tommasi.
Improvements in apparatus applicable to the conversion of cereal and vegetable substances into saccharine matter, in treating and purifying saccharine substances obtained from starch, malt, fruits and vegetables, in treating fatty matters, and in the manufacture of chemical products.	1562	28th May 1870	Alexandre Manbré.
An improved method of and apparatus for separating aqueous from oleaginous substances.	1845	28th June 1870	Henry Medlock.
Bleaching and improving vegetable and animal oils and fats.	1937	8th July 1870	Robert Hutchison.
Improvements in treating and purifying animal and vegetable fats and oils and in apparatus connected therewith.	2281	18th Aug. 1870	James John Shedlock.
Apparatus for pressing or extracting oil from seeds	2366	29th Aug. 1870	John Caboune Simonds Robert Donnison.
Improvements in apparatus for economizing the waste heat and gases from furnaces, and in means for generating, collecting and purifying gases, such gases being applicable to various useful purposes. (*applicable for refining oils.*)	2377	31st Aug. 1870	Thomas Atkins.
Improvements in obtaining grease and oil from soapy and greasy water and in apparatus employed for this purpose. (*Communicated by Alfred Wilgot.*)	2520	19th Sept. 1870	Constant Bogaerts.
Machinery for breaking cotton seed to facilitate the separation of the kernal from the husk.	2532	21st Sept. 1870	Thomas Rose. Robert Emerson Gibson

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
OILS FROM SEEDS, &c.—*continued.*			
Manufacture of woven bags (*used in expressing oil.*)	2753	19th Oct. 1870	James Whitelegge Naylor.
Improved compound lubricating oils	2976	12th Nov. 1870	Miles Williams. John Lamb.
Improvements in treating hydro-carbons and other oils, and in machinery or apparatus employed therefor.	3020	18th Nov. 1870	John Galletly. William MacIvor.
Means for testing or measuring the quality or colour of oils and other liquids.	3027	18th Nov. 1870	Robert Porter Wilson.
Method of charging oil seed presses and the apparatus and envelopes therein employed.	3074	24th Nov. 1870	William Lomas Joy.
Improvements in the process of extracting oil from olives or olive-cakes and in machinery to be employed therefor.	3307	19th Dec. 1870	Giacomo Eduardo Marchisio. Hugh Bulkeley Price. John Eliot Hodgkin.
OILS OF TAR, BITUMEN AND RESIN; NAPHTHA, PARAFFINE, &c.; MINERAL OILS; HYDRO-CARBONS, PHOSPHORUS.			
Obtaining products from mineral and vegetable tars and from certain of their distillates and residues. (*obtaining naphtha and light oils.*)	50	6th Jan. 1870	George Shand.
Improvements in the preparation of combustible liquids for illuminating purposes, and in lamps for burning such or other combustible liquids.	63	7th Jan. 1870	George Grainger Tandy. John Andrews Dryden. William Perkins.
Improvements in obtaining oil from carbonaceous substances, in utilising the bye-products and residues, and in making manure and moulders' blackening.	108	13th Jan. 1870	James Greenshields.
Treatment of acid tars obtained from boghead mineral, schist or petroleum. (*Communicated by Gervais Chevrier.*)	153	18th Jan. 1870	John Henry Johnson.
Improvements in apparatus for evaporating and concentrating liquids, and in recovering reagents from oil refiners' and other bye-products.	208	22nd Jan. 1870	Frederick Augustus Barrow.
Improved apparatus for decanting liquids (*paraffine.*)	217	24th Jan. 1870	Thomas Bentley.
Refrigerating for the manufacture of ice and other purposes. (*extracting paraffine from oils.*)	267	29th Jan. 1870	Henry Joseph West.
Improvements in the manufacture of gas and in obtaining residual products from such manufacture, and in apparatus to be used in such manufacture. (*converting the volatile constituents of tar into light spirit.*)	510	21st Feb. 1870	Frank Clarke Hills.
Improved means and apparatus for testing petroleum and other oils. (*see* "THERMOMETERS.")	598	1st March 1870	Thomas Rowatt, the younger.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Oils of Tar, &c.—*continued.*			
Improvements in apparatus for evaporating, concentrating and distilling liquids, and in recovering reagents from oil refiners' and other bye-products.	793	17th March 1870	Frederick Augustus Barrow.
Treatment of mineral oils - - -	944	31st March 1870	Robert Scott. William MacIvor.
The application of a new material to the production of illuminating oils and solid hydro-carbons suitable for the manufacture of candles and for other purposes. - - - -	961	2nd April 1870	Frederick Field. Gustav Siemssen.
Treatment of napthalene and of hydro-carbon bodies containing napthalene.	1122	18th April 1870	John Barrow.
A process for the recovery, purification and revivification of sulphuric acid spent and deteriorated in the refining of petroleum, coal and shale oils. (*Communicated by Michael Barrett, M.D.*)	1394	16th May 1870	George Willoughby Hemans.
Apparatus for the manufacture of phosphorus -	1411	17th May 1870	Jacob Hort Player.
Manufacture of phosphorus - - - (*Communicated by Edouard Aubertin.*)	1593	1st June 1870	Charles Denton Abel.
Improvements in the manufacture of alum and in obtaining bye products in such manufactures applicable to certain useful purposes. (*phosphorus.*)	1676	9th June 1870	Peter Spence.
Improvements in treating and distilling petroleum and in apparatus employed therein. (*Communicated by James Laws Heverin and James Lloyd Bewley.*)	1823	27th June 1870	Robert Kell.
Storing petroleum and other inflammable or explosive liquids. - - - -	1905	6th July 1870	George Burney. Charles Ingall.
Treating mineral oils - - -	2046	20th July 1870	James Edward Duyck.
Improvements in the manufacture of oil and in the machinery or apparatus to be employed therein.	2320	23rd Aug. 1870	James Lloyd.
Improvements in distilling mineral oils and in apparatus therefor.	2435	8th Sept. 1870	Edmund Richard Southby.
Continuous distilling apparatus for distilling petroleum and other kinds of oils. (*Communicated by Henry Francis Howell.*)	2458	12th Sept. 1870	Thomas Harvey.
Manufacture of hydro-carbon oils made from petroleum, bituminous coals, shales, schists and other bituminous substances. (*Communicated by Joshua Merrill.*)	2544	22nd Sept. 1870	George Tomlinson Bousfield.
Making, refining and purifying an isolating oil applicable to the manufacture of paints and varnishes. - - - -	2553	23rd Sept. 1870	Giacomo Eduardo Marchisio. Edward Stevens.
An improved valve apparatus applicable to vessels for containing petroleum and other volatile oils and spirits. (*Communicated by Messieurs Meissner Ackermann and Company.*)	2596	30th Sept. 1870	George Henry Funck.
Manufacture of oil and other products of petroleum (*Communicated by Charles Toppan.*)	2762	20th Oct. 1870	William Robert Lake.
Purifying hydrocarbon and rosin oils - -	2875	1st Nov. 1870	Arthur Charles Sterry. John Sterry.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
OILS OF TAR, &c.—*continued.*			
An improved metallic composition for roofing, linings, pipes and other purposes. (*for holding petroleum.*) (*Communicated by David Johnson Millard.*)	2935	7th Nov. 1870	William Edward Newton.
Improvements in treating hydrocarbons and other oils, and in machinery or apparatus employed therefor. - - - -	3020	18th Nov. 1870	John Galletly. William McIvor.
Screens more especially applicable for screening mineral phosphates.	3041	21st Nov. 1870	Edward Tonybee.
Vessels and appliances connected therewith for carrying liquid cargoes in bulk. (*petroleum tanks.*) (*Communicated by William Gray Warden.*)	3067	23rd Nov. 1870	John Henry Johnson.
Manufacture of rosin oil - - - (*Communicated by Joshua Merrill.*)	3182	3rd Dec. 1870	George Tomlinson Bousfield.
Treating certain mineral lubricating oils and paraffin	3261	13th Dec. 1870	Joseph James Coleman.
Apparatus for cooling paraffin solutions or other solidifiable or partially solidifiable liquids.	3310	19th Dec. 1870	Norman McFarlane Henderson.
OPTICAL INSTRUMENTS; TELESCOPES, MICROSCOPES, STEREOSCOPES, LENSES; OPTICAL ILLUSIONS.			
Improvements applicable to cabinet stereoscopes and other similar apparatus.	1318	9th May 1870	George Stothert Penny, M.R.C.S.
Cameras for reflecting and magnifying opaque objects. (*Communicated by Theodore Kung and Henry Strubin.*)	1563	28th May 1870	Emil Adam Strubin.
Spectacles, eye-glasses and like articles - - (*Communicated by Eloi Eugene Narcisse Derogy.*)	1694	13th June 1870	Michael Henry.
Improved means of exhibiting in the open air advertisements, photographic views, portraits or pictures, and also for decorating the fronts of theatres and other buildings.	2202	8th Aug. 1870	Jean Marie Auguste Lacomme.
An improved instrument adapted for taking bearings and for making rapid surveys with approximate accuracy.	2237	11th Aug. 1870	Robert Edward Barker.
Microscopic apparatus - - - (*Communicated by James Lloyd Oliver.*)	2486	15th Sept. 1870	George Haseltine.
Improvements in lamps and in the construction of lenses and reflectors - - -	2529	20th Sept. 1870	James Couper, the younger. William Haden Richardson.
Opera glasses, field glasses and other Galilean telescopes.	2750	19th Oct. 1870	John Henry Dallmeyer.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
OVENS AND KILNS.			
Improvements in the preparation of iron ores for smelting and in kilns or furnaces employed for that purpose.	176	20th Jan. 1870	Charles Cochrane.
Improvements in treating iron ores and in the furnaces or ovens employed for such purpose. (*see* "FURNACES.")	328	4th Feb. 1870	Alexandre Le Brun-Virloy.
Kilns or ovens for burning or baking bricks, tiles or other articles of plastic material and lime.	545	24th Feb. 1870	James Edmonston Core.
Means and utensils employed with apparatus used in cooking, combining arrangements for burning a light, forming a complete "kitchener."	658	5th March 1870	Ebenezer Stevens.
Improved steam-boilers and furnaces utilizing the lost heat of lime, cement, brick or other circular or other kilns.	670	7th March 1870	Pierre Joseph Robine.
Improvements in the manufacture of hollow cast-iron cooking utensils and in the means or apparatus employed therefor or connected therewith, part of which apparatus is applicable to the moulding of other articles. (*heating the japanning ovens.*)	696	9th March 1870	John Neilson.
Limekilns and similar kilns - - -	767	15th March 1870	Peter William Spencer.
Kilns or apparatus for drying malt - - (*Communicated by Robert Overbeck.*)	769	15th March 1870	William Edward Newton.
Limekilns - - - - - (*Communicated by Pierre Jacques Gerbault-Guichard.*)	808	18th March 1870	Henry Edward Newton.
Improvements in the production of artificial fuel and in apparatus to be employed for such purpose. (*ovens for drying and baking.*) (*Communicated by the Anthracite Fuel Manufacturing Company (Incorporated).*)	928	30th March 1870	John Henry Johnson.
An improved portable oven, a modification of which may also be used for heating apartments.	964	2nd April 1870	James Wadsworth.
Construction of kilns - - -	983	4th April 1870	James Wood Baker. George Worsnop. John Grainge.
Manufacture of coke and the apparatus connected therewith. (*construction of kilns or ovens.*)	1149	20th April 1870	Jonathan Green.
Improvements in kilns or ovens and in apparatus employed therewith, chiefly designed for drying and burning bricks, tiles and ceramic ware.	1190	23rd April 1870	Augustus Morand.
Construction of ovens and kilns - -	1294	5th May 1870	William Brough, senior. William Brough, junior.
Improvements in obtaining and applying heat and in furnaces employed therein, also in utilizing a product resulting therefrom.	1304	6th May 1870	Thomas Don.
Machinery or apparatus for supplying coal, cannel or other substances to gas retorts or ovens, and for withdrawing the same after distillation. -	1664	9th June 1870	James William Butler. William David Butler. James Dunbar.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
OVENS, &c.—*continued.*			
Improvements in smelting iron and other ores, and in the apparatus employed therefor. (*blast heating ovens.*)	1790	23rd June 1870	Andrew Barclay.
Kilns employed in the manufacture and reburning of animal charcoal.	1935	8th July 1870	James Buchanan. Samuel Vickess.
Ovens (*Communicated by Hosea Ball.*)	2052	20th July 1870	Benjamin Joseph Barnard Mills.
Improvements in calcining and reducing iron ores, and in furnaces or kilns employed in connection therewith, which improvements are applicable chiefly to the production of cast steel.	2134	30th July 1870	Charles William Siemens.
Improvements in the construction of bakers' ovens, and in apparatus connected therewith.	2378	31st Aug. 1870	John Adair.
An improved screen-wire for dressing wheat and other grain, which web is also applicable to dressing sieves generally and for the floors of malt and other drying kilns.	2429	8th Sept. 1870	William Silcock.
An improved oven for baking biscuits, bread and other aliments.	2607	30th Sept. 1870	Edward Wylam.
Improvements in mechanism for giving a slow rotatory motion to the bottoms of ovens, to frames or supports for exhibiting articles in shop windows and for other like purposes, and in frames or supports to be actuated by the said mechanism.	2835	27th Oct. 1870	Alfred Bennett.
OXIDATION AND INCRUSTATION, (*Preventing and Removing.*)			
Regenerative hot-blast stoves for heating air, steam and other gases. (*removing deposit.*)	34	5th Jan. 1870	Charles William Siemens. Edward Alfred Cowper. Charles Cochrane.
Improvements in spring seats, chairs and mattresses, such improvements being also applicable to other purposes. (*preventing oxidation.*) (*Communicated by Pierre Gustave Nourissé.*)	69	8th Jan. 1870	Alexander Melville Clark.
A new or improved process for cleansing, drawing and tinning wire. (*rendering inoxidizable.*) (*Communicated by Jean Baptiste Auguste Daubié.*)	188	21st Jan. 1870	Thomas James Smith.
An improved composition for preventing the fouling of iron and other ships' bottoms and for preserving metal and other surfaces.	370	8th Feb. 1870	William Davison. William Richards.
An improved method of constructing submarine telegraph cables for the support of insulated conductors for communicating intelligence between nations and foreign countries by electricity. (*protecting cable from corrosion.*)	409	11th Feb. 1870	James Story.
Boiler fittings (*preventing scale.*)	634	3rd March 1870	William Henry Bailey.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
OXIDATION, &c.—*continued.*			
Certain improvements in water tube boilers (*removing deposit of mud.*)	790	17th March 1870	John Pinchbeck.
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation and preserving wood and other materials.	986	4th April 1870	Achille Thomas-Anquetil.
Compositions for coating ships' bottoms and other like purposes; also applicable to stone and other building materials. (*anti-corrosive.*)	1096	14th April 1870	William Jesty.
Construction of multitubular steam-boilers (*Communicated by Georg Friedrich Udelhoven.*)	1207	26th April 1870	Alexander Browne.
Improvements in applying electricity or electro magnetism on board ships in order to prevent incrustation or fouling of their bottoms and the deviation of their compasses, and to produce electric light.	1347	11th May 1870	Charles Weightman Harrison.
Construction and arrangement of steam-boilers	1416	17th May 1870	Edward Green.
Cleansing ships' bottoms	1439	19th May 1870	James Steart.
Piles for engineering purposes (*preserving the metal from corrosion or oxidation.*) (*Communicated by Thomas W. H. Moseley and Frederick Allen Leigh.*)	1498	24th May 1870	Evan Leigh.
Improved means and apparatus for exhausting, forcing and purifying gas for heating and illuminating purposes. (*preventing deposit of thick tar and salts.*)	1560	28th May 1870	William Cleland.
An improved mode of preventing the corrosion of iron exposed to water or dampness. (*Communicated by Cornelius Godfrey.*)	1603	2nd June 1870	Alfred Vincent Newton.
An improved metallic paint for preventing the corrosion and fouling of ships' bottoms and other surfaces in water. (*Communicated by James Gamage Tarr and Augustus Henry Wonson.*)	1638	6th June 1870	William Robert Lake.
Steam-boilers (*Communicated by John Benjamin Root.*)	1675	9th June 1870	William Edward Newton.
Construction of ships	1837	28th June 1870	Joseph Westwood. Robert Baillie.
Means of producing and regulating motive-power	1859	30th June 1870	John Bourne.
An improved method of incorporating metal and cement in the construction of tanks, boxes, vases or pots for horticultural and other purposes, water and other pipes and conduits, artificial ponds, reservoirs, basins and rivulets, embankments of watercourses and analogous works. (*Communicated by Joseph Monier.*)	1999	15th July 1870	William Edward Gedge.
Certain improvements in water tube boilers (*preventing deposit.*)	2118	28th July 1870	John Pinchbeck.
A new or improved composition for preserving iron and steel from rust.	2206	9th Aug. 1870	Edward John Powell.
Apparatus for cleansing steam-boilers	2299	20th Aug. 1870	Joseph Whitehead Broadbent.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
OXIDATION, &c.—*continued.*			
Coating metal sheathing and other surfaces exposed to the action of sea water in order to preserve them and keep them clean.	2318	23rd Aug. 1870	William John Hay.
Improvements in apparatus for economising the waste heat and gases from furnaces, and in means for generating, collecting and purifying gases, such gases being applicable to various useful purposes. (*applicable for preventing incrustation in boilers.*)	2377	31st Aug. 1870	Thomas Atkins.
Improvements in the electro deposition of tin, which improvements are applicable to the prevention of the oxidation or tarnishing of silver surfaces and as a coating for other metals.	2580	28th Sept. 1870	John Edward Bingham.
Steam-engines - - - - - (*washing out saline deposits.*) (*Communicated by John Houpt.*)	2678	10th Oct. 1870	William Robert Lake.
Machinery or apparatus for washing, opening and drying wool and other fibrous materials, and washing yarns. - - - - - (*cleansing out sediment.*)	2772	21st Oct. 1870	John McNaught. William McNaught, junior.
Improvements in the manufacture of salt and in the apparatus employed therein. (*removing incrustations.*) (*Communicated by J. R. Buchanan.*)	2782	21st Oct. 1870	William Edward Newton.
An automatic ventilator, alarm and pump for vessels. (*preventing corrosion in valves, &c.*) (*Communicated by William Fitz James Thiers, P. D. Rodney and Edward Parkman.*)	3117	28th Nov. 1870	Benjamin Joseph Barnard Mills.
Surface condensers - - - - - (*removing deposit from the tubes.*)	3286	15th Dec. 1870	William Allan.
Preventing incrustation in and corrosion of steam-boilers and other vessels. (*Communicated by James Charles Adolphus Dick.*)	3402	31st Dec. 1870	Edward Primerose Howard Vaughan.
PAINTING, COLOURING AND VARNISHING; PAINTS, COLOURS, VARNISHES, GLAZES AND LACQUER.			
Ornamenting surfaces - - -	137	17th Jan. 1870	Frederick Samuel Lines.
An improved vehicle or composition to be mixed with white lead and other pigments in lieu of linseed or boiled oil, turps and dryers, to form paint.	164	19th Jan. 1870	John Axtell Deacon Cox.
Machines for removing paint from wood -	505	21st Feb. 1870	Samuel Hulme.
A method of producing an improved black pigment and obtaining phosphates and other substances from the waste portions of the hop plant. (*Communicated by Frederic Rotter.*)	515	22nd Feb. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PAINTING, &c.—*continued.*			
Methods of manufactures and combinations therewith of processes for producing pictorial, ornamental and other designs and devices. (*transferring and varnishing.*)	600	1st March 1870	Benjamin George George.
Apparatus for the preservation of life from fire (*adapted to facilitate house painting.*)	774	16th March 1870	William Morgan.
Manufacture of washable papers (*applying a mixed paint or colouring matter.*)	799	17th March 1870	Charles Hermann Rost.
Producing photographic pictures on tissues or fabrics	802	18th March 1870	Charles Janicot.
An improved varnish paint	901	28th March 1870	James Sampson. Richard Rowlands Minton.
Improvements in photography by processes which combine printing, painting and transferring for the production of chromo-photographs. (*producing vitrified enamel-lithographs.*)	941	31st March 1870	William McCraw.
Mills for crushing and grinding (*paints or colours.*) (*Partly communicated by Charles Ross and John Ross.*)	967	2nd April 1870	Henry Jackson.
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation and preserving wood and other materials. (*obtaining a pigment, glaze, coating varnish or polish.*)	986	4th April 1870	Achille Thomas Anquetil.
An improved apparatus to be used in window cleaning and for other similar purposes. (*for painting.*)	1038	8th April 1870	Charles Francis Anderson.
Ornamenting wood, leather and other materials for the manufacture of fancy boxes, furniture, panellings and for other ornamental purposes. (*staining by sprinkling.*)	1058	11th April 1870	Archibald Brown.
Compositions for coating ships' bottoms and other like purposes, also applicable to stone and other building materials. (*paints or varnishes.*)	1096	14th April 1870	William Jesty.
Making white lead	1111	16th April 1870	Isham Baggs.
Manufacture of certain pigments or paints (*Communicated by Marc Antoine Francois Mennons.*)	1415	17th May 1870	Bristow Hunt.
An improved metallic paint for preventing the corrosion and fouling of ships' bottoms and other surfaces in water. (*Communicated by James Gamage Tarr and Augustus Henry Wonson.*)	1638	6th June 1870	William Robert Lake.
Preparation of corks for rendering them impermeable and to preserve them from decay. (*varnishing.*) (*Communicated by Auguste de Müller.*)	1670	9th June 1870	Charles Denton Abel.
Staining and ornamenting wood	1689	11th June 1870	Andrew Fingar Brophy.
Paint brushes (*Communicated by James Joseph Lowerre.*)	1726	16th June 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PAINTING, &c.—*continued.*			
Improvements in treating and distilling petroleum and in apparatus employed therein. (*oil for paint.*) (*Communicated by James Laws Heverin and James Lloyd Bewley.*)	1823	27th June 1870	Robert Kell.
Paints and pulveriser therefor - - -	2191	6th Aug. 1870	James Johnson.
Improvements in centrifugal machines, in the suspension and driving of the same, and a new or improved combination thereof with other apparatus. (*for separating colouring matter from water for paint.*)	2550	23rd Sept. 1870	David McColley Weston.
Making, refining and purifying an isolating oil applicable to the manufacture of paints and varnishes. - - - - - -	2553	23rd Sept. 1870	Giacomo Eduardo Marchisio. Edward Stevens.
Blacking or painting pipes and tubes and the moulds in which they are formed.	2582	28th Sept. 1870	Samuel Woodhall.
Improved polish or renovator for polished wood, papier-mâché and other furniture or articles.	2583	28th Sept. 1870	John Hamilton.
An improved mode of colouring india-rubber and other like waterproof fabrics or materials. (*colouring varnishes.*)	2761	20th Oct. 1870	Alfred Ford.
Treatment of resinous gums employed in the manufacture of varnishes. - - - -	2804	25th Oct. 1870	Charles Watts. Thomas Charles Watts.
Machinery for grinding, particularly applicable for grinding gold and other expensive colors used by potters and others. - - - -	2894	3rd Nov. 1870	Richard Bewley. Isaac Cotton, junior.
Preparation of surfaces adapted for painting, photographic and other printing.	2948	9th Nov. 1870	William Vincent Wallace.
Manufacture of street and carriage indicators - (*painting vitreous fluid on glass then partially fusing.*)	2955	10th Nov. 1870	William Higgins, junior.
Varnishes - - - - - -	3201	6th Dec. 1870	John Macintosh.
Improvements in holders for continuous matches and in binding materials for making continuous and other matches. - - - - - (*using varnishes.*)	3246	10th Dec. 1870	William Perkins. George Grainger Tandy.
PAPER, PASTEBOARD AND PAPIER-MÂCHÉ; PAPER-HANGINGS.			
I.—Making Paper, Papier-mâché, Preparing Pulp, &c.			
Machinery used in making paper - -	39	5th Jan. 1870	Yates Duxbury.
Machinery or apparatus for cuttting wood into shreds or shavings to be used in the manufacture of paper. - - - - -	129	15th Jan. 1870	John Robinson. John Smith.
Rag engines - - - - - -	132	15th Jan. 1870	Edwin Grundy Wrigley.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PAPER, &c.—*continued.*			
Making paper - - - -	234	26th Jan. 1870	William Hay.
An improved method of re-utilizing caustic soda lye. (*in manufacture of paper.*)	365	8th Feb. 1870	Emil Krúger.
Manufacture of vegetable parchment or parchment paper. (*Communicated by Colin Campbell.*)	459	16th Feb. 1870	William Robert Lake.
Machinery or apparatus for straining paper pulp - (*Communicated by Jules Mathieu.*)	536	23rd Feb. 1870	John Henry Johnson.
Treatment of certain fibrous substances to be used in the manufacture of paper pulp for paper and for conversion into textile fabrics.	587	28th Feb. 1870	Charles Duff.
Improvements in the manufacture of pulp for making paper or papier-mâché and in the apparatus employed therein.	675	7th March 1870	William Law.
Bleaching vegetable fibres - - - (*and waste of flax for paper pulp.*)	693	9th March 1870	Harold Potter.
Treatment of fibrous materials suitable for the manufacture of paper.	748	14th March 1870	Thomas Routledge.
Improved machinery or apparatus and processes for the manufacture of paper and other pulp from wood and other fibrous materials.	750	15th March 1870	John Felber.
Manufacture of washable papers - - -	799	17th March 1870	Charles Hermann Roet.
Apparatus for washing and treating pulps - - (*for making paper.*) (*Communicated by Louis Joseph Amedée Lespermont.*)	994	5th April 1870	Alexander Melville Clark.
Improvements in the utilization of a certain material obtained in treating cotton seed, and in machinery employed therein. - - - (*obtaining fibre for paper making.*)	997	5th April 1870	Thomas Rose. Robert Emerson Gibson
Obtaining fibre suitable for making paper and a brown coloring matter.	1024	7th April 1870	Louis Abraham Brode.
Treatment of esparto grass and other fibrous materials. (*for paper-making.*)	1525	26th May 1870	George Lunge.
Improvements in attaching or fixing the devices for effecting the water mark in paper to the covers of the dandy rolls and to the moulds used in the manufacture of paper, also in the construction of such dandy rolls, covers and moulds. - - - - -	1631	6th June 1870	Thomas Allen Marshall Charles Dudley Marshall
Apparatus for cutting wood into small strips, filaments or shavings.	1828	27th June 1870	William Riddell.
An improved mode of and apparatus for raising or elevating certain kinds of paper-making materials from revolving boilers. - - -	1879	2nd July 1870	Thomas Rose. Robert Emerson Gibson
Improvements in the treatment and preparation of materials to be employed in the manufacture of paper and in apparatus to be employed in such treatment and preparation, applicable also wholly or in part to the bleaching of other substances or materials.	1974	13th July 1870	David Adam Fyfe.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PAPER, &c.—*continued.*			
Improvements in packings and in bearing surfaces, and in the preparation or treatment of materials composing the same. (*treating paper for packings.*) (*Communicated by Eliza Dexter Murfey.*)	1997	14th July 1870	John Henry Johnson.
Manufacture of vegetable parchment or parchment paper. (*Communicated by Colin Campbell.*)	2100	26th July 1870	William Robert Lake.
Manufacture of paper - - - -	2106	26th July 1870	Albert Edwin Reed.
An improved fumigating material - - - (*fumigating paper.*)	2125	29th July 1870	George Cupit Fowler.
Improvements in the mode of extracting the filaments of straw and the bark of the mulberry tree, and in converting the same into pulp for the manufacture of paper, and in the apparatus therefor.	2190	6th Aug. 1870	Gustave Demailly.
Improvements in the preparation of worts, whereby an improved yield is obtained with a residue suitable to be employed in the manufacture of paper, also in the employment of such residue, whether obtained in the preparation of worts or from other sources, in the manufacture of paper.	2231	11th Aug. 1870	Solomon Bennett.
Improvements in the production of pulp suitable for the manufacture of paper from wood, straw, grass and other vegetable matter. (*Communicated by August Deininger.*)	2310	22nd Aug. 1870	Frederick Arthur Paget.
Machinery or apparatus for cutting wood into shreds or shavings to be used in the manufacture of paper. - - - -	2321	23rd Aug. 1870	John Robinson. John Smith.
Improvements in the treatment of certain fibrous substances to be used in the manufacture of paper pulp for paper and for conversion into textile fabrics.	2351	27th Aug. 1870	Charles Duff.
Manufacture of casting blocks and printing blocks used for heliographic and other printing. - (*preparing the surface of paper.*)	2464	13th Sept. 1870	George Baldock. Thomas George Denne. August Heutschel.
Improvements in the treatment of fibrous materials suitable for the manufacture of paper and in apparatus to be employed therein.	2470	13th Sept. 1870	Thomas Routledge.
An improved process for making pulp or half-stuff from wood and other vegetable fibres. (*Communicated by Thomas Levens.*)	2695	12th Oct. 1870	Amasa Mason.
Manufacture of leather paper - - -	2720	14th Oct. 1870	John Harcourt Brown.
Preparation and use of peat or turf, and bituminous, resinous and ligneous substances as fuel, and for other purposes. (*pasteboard or papier-mâché.*)	2831	27th Oct. 1870	Jacob Geoghegan Willans.
Apparatus employed in the preparation of materials for the manufacture of paper. - - -	3133	30th Nov. 1870	James Abraham Lee. Edward Sweetapple.
Improved method of treating wood and other similar fibrous substances for the manufacture of half stuff and paper. - - -	3148	1st Dec. 1870	Thomas Wrigley. Henry Bruce. Carl Dietrich Julius Seitz.
A new or improved method of and apparatus for washing or cleansing whilst in motion the felts used in making paper by machine.	3160	2nd Dec. 1870	Thomas John Marshall.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PAPER, &c.—*continued.*			
Manufacture of paper pulp - - - -	3239	9th Dec. 1870	William Denny Ruck.
Improved compositions for sizing, dressing and finishing threads, yarns, textile fabrics and paper.	3273	14th Dec. 1870	Elijah Slack.
Improvements in materials for the manufacture of paper, also applicable for other purposes. -	3385	28th Dec. 1870	Augustus Henry Thurgar. Charles Henry Capon.
Improvements in paper stock, and means or method of making paper pulp from wood, straw, cane, esparto grass, flax, flax tow, hemp, hemp tow, jute, jute tow, Manilla rope or Manilla tow, and all analogous material or vegetable substances, and in the treatment of materials used therein and in apparatus for treating the same. (*Communicated by Morris Longstreth Keen.*)	3392	29th Dec. 1870	Samuel Armstrong Walsh
XI.—Cutting, Folding and Ornamenting Paper and Papier-mâché; Applications of Paper.			
Improvements in dials for gas regulators and in dials in general, also in besils or rings for dial faces. (*of paper or papier mâché.*)	61	7th Jan. 1870	John Carnaby.
Improvements in the manufacture of shot and in apparatus employed therein. (*substituting perforated pasteboard or strong paper.*)	134	15th Jan. 1870	Gerhard Lampen.
Ornamenting surfaces - - - -	137	17th Jan. 1870	Frederick Samuel Lines.
Preparation of paper or other surfaces for the production or manufacture of pictures by photography.	201	22nd Jan. 1870	John Robert Johnson.
Producing end and cover papers for books in order to retain brilliancy of surface.	517	22nd Feb. 1870	Alexander William Bain.
Machinery or machines for type design and color printing on paper and other materials, and creasing, scoring or bending, cutting and perforating the same simultaneously.	562	25th Feb. 1870	Edward Tomlinson.
Manufacture of artificial flowers and foliage - (*rice paper and vegetable parchment.*) (*Communicated by Octave Eugène Fillion.*)	606	1st March 1870	Alexander Melville Clark
An improved telegraph - - - - (*perforating the paper strip.*)	765	15th March 1870	Gustav Jaite.
Improvements in moulds used in stereotyping and in apparatus for producing the same. (*paper moulds.*) (*Communicated by Hippolyte Auguste Marinoni.*)	797	17th March 1870	Alexander Melville Clark
Certain improvements in the construction of paper collars so far as regards the lining and strengthening thereof.	1031	7th April 1870	Francis Taylor.
Construction of partitions or walls - - (*in millboard and felt.*)	1106	14th April 1870	Charles Beard.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PAPER, &c.—*continued.*			
Manufacture of bearings, slides and packings for steam-engines and other machinery. (*of paper or other pulp.*) (*Communicated by Elisa Dexter Murfey.*)	1401	16th May 1870	John Henry Johnson.
An improved process and apparatus for preparing and finishing printed paper. - - -	1522	26th May 1870	John Appleton. Robert Craib Ross.
Ornamenting the edges and margins of books and paper. (*note paper.*)	1587	31st May 1870	John Leighton, senr.
Venetian blinds for windows and other like purposes. (*using cardboard, papier mâché, &c.*)	1720	16th June 1870	Howard Busby Fox.
An improved coating for safety fuzes used in mining. (*paper pulp.*)	1735	17th June 1870	William Bickford Smith.
Machinery or apparatus for manufacturing "spool" or paper tubes for use in spinning machinery. - (*Communicated by Joseph Geiger and Aloyse Geiger.*)	1805	25th June 1870	James Shackleton. Benjamin Shackleton.
Improvements in ornamenting paper, woven fabrics and other surfaces, and in apparatus employed therein.	1869	1st July 1870	Hubert Airy.
Printing machines and apparatus connected therewith. (*folding and cutting sheets of paper.*)	1993	14th July 1870	Henry Martyn Nicholls.
Cutting, boring, grinding and pulverising stone and other hard substances. (*Communicated by Benjamin Chew Tilghman.*)	2147	1st Aug. 1870	Alfred Vincent Newton.
Improvements in the manufacture of "spool" tubes and other tubes of paper, and in dyeing or coloring and marking the same, and in machinery or apparatus to be employed therefor.	2292	19th Aug. 1870	William Ambler.
Machinery for making paper bags - -	2457	10th Sept. 1870	Amasa Mason.
An improved machine for cutting mill boards, card and similar materials to a required breadth and length.	2502	16th Sept. 1870	Henry James Williams.
Bows, scarves and similar articles to be worn with collars. (*Communicated by Elizabeth H. Clarke.*)	2662	7th Oct. 1870	George Haseltine.
Machinery for tracing and multiplying patterns, designs and such like. (*perforating designs on paper.*) (*Communicated by F. Henry Langsdorff.*)	2930	7th Nov. 1870	Robert Boyd.
Advertising and apparatus connected therewith - (*perforating.*)	2944	8th Nov. 1870	Henry Cyrus Symons.
Preparation of surfaces adapted for painting, photographic and other printing. (*substitute for paper.*)	2948	9th Nov. 1870	William Vincent Wallace.
Improved machinery or apparatus for doubling, cutting off, separating and folding paper as delivered from rotary web printing machines. - (*Partly communicated by George Lauder.*)	3031	19th Nov. 1870	George Duncan. William Ashley Wilson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PAPER, &c.—*continued.*			
Improvements in carpet linings and stair pads, and in machinery for manufacturing the same. (*of paper.*) (*Communicated by John Robinson Harrington.*)	3088	24th Nov. 1870	George Haseltine.
III.—Paper-hangings.			
Methods of manufacture and combinations therewith of processes for producing pictorial, ornamental and other designs and devices. (*applying layers of flock.*)	600	1st March 1870	Benjamin George George.
Manufacture of washable papers - - - (*for covering walls and ceilings.*)	799	17th March 1870	Charles Hermann Rost.
An improved machine for cutting paper hangings -	2566	26th Sept. 1870	David Pirie. Alexander Croom.
Improvements in engraved or ornamented blocks or plates, in the mode or method of producing the same, and in the apparatus or mechanism employed therein, which apparatus is also applicable to other useful purposes. (*for wall papers.*) (*Communicated by Claus Van Haagen.*)	3366	24th Dec. 1870	John Henry Johnson.
PARCELS AND LETTER-BAGS. (*Depositing and Removing.*)			
Improved apparatus for slipping and depositing parcels and packages or other objects.	1007	6th April 1870	Edward Jacob Hill.
Apparatus for giving danger and other signals and for delivering mail bags and parcels to and from railway engines and trains in motion.	3153	1st Dec. 1870	Thomas Lawrence M'Cready.
PAVING, ROAD-MAKING AND CLEANSING; PAVEMENTS.			
Improvements in wooden pavements and in cutting the blocks therefor. (*Communicated by William Wilmot Ballard.*)	130	15th Jan. 1870	Alexander Melville Clark.
Railways, tramways, common roads, and machines and vehicles to run thereon.	512	22nd Feb. 1870	William Bridges Adams.
Improvements in the construction of roads and ways and in the materials employed therein, which materials are also applicable to other purposes for which asphalt is generally employed. (*Communicated by Leopold Wiart.*)	784	16th March 1870	John Henry Johnson.
Wood paving with or without rails - -	817	19th March 1870	Samuel Norris.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PAVING, &c.—*continued.*			
Apparatus for breaking and crushing stones for use in macadamizing roads, for railway ballast, for employment in the manufacture of béton, of French concretion or mortar, and for producing sand or gravel of various degrees of coarseness. (*Communicated by Claude Leon Desmolins.*)	1239	30th April 1870	Arthur Charles Henderson.
An improved machine for watering and sweeping streets. (*Communicated by I. Wetzlar.*)	1523	26th May 1870	George Schück.
Improved apparatus for scraping and cleansing streets and roads.	1590	1st June 1870	Robert Hughes.
Improvements in the manufacture of artificial stone and in articles composed thereof. (*slabs for flooring.*)	1822	27th June 1870	William Bennet Adamson.
Formation of roadways, pavements and such like surfaces. (*Communicated by Henry Hughes.*)	2030	19th July 1870	John Edward Hughes.
An improvement in wood pavement - - (*Communicated by William Wilmot Ballard.*)	2214	9th Aug. 1870	Alexander Melville Clark.
An improved pavement - - - -	2308	20th Aug. 1870	Charles Pinnington.
An improved pavement - - -	2327	24th Aug. 1870	Austin Goodyear Day.
An improved construction of mud cart and water cart combined.	2328	24th Aug. 1870	William Berry.
Tramways and road surfaces - - -	2340	25th Aug. 1870	Samuel Dyer Tillman.
Wood paving with or without rails - - (*Communicated by Samuel Norris.*)	2509	17th Sept. 1870	William Edward Newton.
Construction of illuminating and ventilating roofs and gratings or plates, parts of which are applicable to ordinary footways and carriage ways. (*Communicated by Theodore Hyatt.*)	2755	20th Oct. 1870	John Henry Johnson.
An improved silicious compound applicable for the manufacture of pipes, tiles, bricks and other articles for buildings and for paths, floors, roofs and other analogous purposes. (*Communicated by William Augustus Battersley, Timothy Reed Crawford and Robert Brown.*)	2863	31st Oct. 1870	William Edward Newton.
Road and other rollers - - - -	3013	17th Nov. 1870	Robert Balls Hughes.
An improvement in the manufacture of pavements, waterproof linings and coverings.	3125	29th Nov. 1870	Henry Slingsby Bethell.
Illuminating gratings for roads, streets and other ways, and for floors and roofs generally. (*Communicated by Theodore Hyatt.*)	3195	5th Dec. 1870	John Henry Johnson.
Machinery or apparatus for breaking, crushing and pulverizing cement and other substances. (*road metal.*)	3295	16th Dec. 1870	Julius Frederick Moore Pollock.
Machinery or apparatus for the cultivation of land and for other purposes. (*picking or digging up roads.*)	3317	19th Dec. 1870	William Jeffrey Hopkins.
Viaducts adapted both for pedestrian traffic and for the supply of fresh air to buildings in crowded localities. (*Communicated by John Perry.*)	3388	29th Dec. 1870	George Tomlinson Bousfield.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PEAT.			
Preparing, treating and purifying fibrous vegetable and fibrous animal substances. (*peat.*)	588	28th Feb. 1870	Thomas Cattell.
Machinery or apparatus for compressing, forming and extracting moisture from peat, clay and other materials. (*Communicated by Thomas Ellis and William Alonzo Ellis.*)	896	26th March 1870	John Henry Johnson.
Manufacture of peat charcoal - - -	919	29th March 1870	Jean Baptiste Passedoit. Louis Antoine Ritterbandt.
An improvement in machines for working and preparing peat for fuel. (*Communicated by Charles Luxton.*)	1594	1st June 1870	Alexander Melville Clark.
Manufacture of peat charcoal - - - (*Partly communicated by Jean Baptiste Passedoit.*)	1743	17th June 1870	Louis Antoine Ritterbandt.
Certain improvements in the mode of and apparatus for charring wood, peat, bones and other vegetable and animal matters.	2714	14th Oct. 1870	Frederick Ludewig Hahn Danchell.
Preparation and use of peat or turf, and bituminous, resinous and ligneous substances, as fuel and for other purposes.	2831	27th Oct. 1870	Jacob Geoghegan Willans.
An improved method of and apparatus for expelling volatile matters from peat.	3057	22nd Nov. 1870	Thomas George Walker.
Machinery for excavating and preparing peat -	3268	14th Dec. 1870	Frederick Ludewig Hahn Danchell.
Improvements in heating, drying and evaporating, and in apparatus to be used therein. - - (*drying peat.*)	3364	24th Dec. 1870	Christopher Rawson. Philip Ovenden. William McCree.
PENS, PENHOLDERS, PENCILS AND PENCIL-CASES.			
Metallic pens - - - - -	581	26th Feb. 1870	Duncan Cameron.
Improvements in friction lights and in apparatus to be employed therewith. (*caps which may be used as pens.*)	755	15th March 1870	William Henry Samuel.
Cases or receptacles for needles, pins, matches, pens, cards, stamps, photographs, cotton and other similar articles.	1473	21st May 1870	William Avery.
Improvements in pencils for marking on linen and other materials and in means connected with their use.	1832	27th June 1870	Charles McDermott.
Fountain pens - - - - -	1964	12th July 1870	John Butcher.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PENS, &c.—*continued.*			
Machinery or apparatus for reducing wood, metal, or other hard material to fixed patterns. (*penholders.*) (*Communicated by Frederick Baldwin.*)	1987	14th July 1870	Giovanni Sconcia.
An improved alloy or metal - - - (*for pens and pencil cases.*) (*Communicated by James C. Booth.*)	2382	1st Sept. 1870	Campbell Morfit.
A novel application of stereoscopic views to match boxes and other boxes or cases. (*pen boxes.*)	2408	3rd Sept. 1870	Hippolyte Fontaine.
Metallic pens and penholders - - -	2561	24th Sept. 1870	Hezekiah Hewitt.
Pencil cases - - - - -	2825	27th Oct. 1870	William Riddle.
Penholders and pens - - - -	2978	12th Nov. 1870	Isaac Jacobs.
Penholders - - - - - -	3002	16th Nov. 1870	Ising Rheinberg. Nathan Rheinberg.
Improvements in hardening steel pens and other steel articles and in apparatus employed for that purpose. (*penholders.*)	3023	18th Nov. 1870	Richard Hipkiss.
PETTICOATS, SKIRTS, STAYS, CRINOLINES, DRESS SUSPENDERS, COLLARS, SHAWLS, MUFFS, LADIES' FANS.			
Improvements in ornamenting woven and felted fabrics and in apparatus employed therein. - (*for dresses and underclothing.*)	210	22nd Jan. 1870	John William Eyres. John Longbottom.
Weaving of seamless articles - - - (*petticoats.*)	270	29th Jan. 1870	Samuel Whitehall Mulloney.
Manufacture of muffs, ladies' collars, trimmings and other similar articles.	278	31st Jan. 1870	Joseph Clark.
Fans - - - - - - (*Communicated by Jacques Roehrig.*)	314	3rd Feb. 1870	Benjamin Joseph Barnard Mills.
Improvements in the manufacture of yarns and fabrics containing horse hair, and in means or methods for shaping and utilizing fabrics containing the same or analogous stiffening material. (*corsets, bustles, skirts, &c.*)	604	1st March 1870	Henry Hayward.
Waterproof garments - - - - (*ladies' jackets and cloaks.*)	646	4th March 1870	Samuel Cohen.
Boxes for containing furs and protecting them from the ravages of insects.	672	7th March 1870	Henry Herbert.
Certain improvements in the manufacture and construction of skirts.	708	10th March 1870	James Brady.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PETTICOATS, &c.—*continued.*			
Certain improvements in the construction of paper collars, so far as regards the lining and strengthening thereof.	1031	7th April 1870	Francis Taylor.
Production of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials. (*for leaves of fans.*)	1159	20th April 1870	George William Ley.
An improved spring fastening for securing purses, pocket-books, cigar cases and similar articles, and for other like purposes. (*applicable to stays.*) (*Communicated by Mathurin Brouard.*)	1244	30th April 1870	William Robert Lake.
Shirts - - - - - - - (*Communicated by Isaac Merritt Singer.*)	1390	14th May 1870	Bristow Hunt.
An improved fastening for leggings, gaiters, stays and corsets.	1417	17th May 1870	Bernard Birnbaum.
Machines for and the manufacture of knitted goods. (*gores for underskirts.*)	1428	18th May 1870	David McColley Weston.
Fastenings applicable to purses and such like articles. (*stays.*) (*Communicated by Paul Sormany.*)	1450	9th May 1870	Joseph Schloss.
Manufacture of embossed fabrics in imitation of quilting, and applicable especially to the making of ornamental petticoats.	1567	28th May 1870	Robert John Collins.
Fastenings for elastic stockings, stays, corsets, bandages, and other articles of dress or wearing apparel.	1820	27th June 1870	John George Henry Hill.
Fans - - - - - - -	1839	28th June 1870	John George Henry Hill.
An improved method or application for preserving the fronts or edges of stays, corsets and other similar articles.	1934	7th July 1870	Francis William Roberts.
An improvement in stay busks - -	2018	16th July 1870	Henry George Avery.
Improved manufacture of trimmings, edgings, ruchings, plaiting and other similar goods. (*for ladies' dresses.*)	2300	20th Aug. 1870	Hesketh Hughes.
An improved sewing-machine attachment for manufacturing tubing or piping for ornamenting dresses and for other like purposes. (*Communicated by George Henry Collins.*)	2358	27th Aug. 1870	William Robert Lake.
An improved fastening for garments and other articles or purposes. (*for corsets.*) (*Communicated by Joseph Edward Dallon.*)	2477	14th Sept. 1870	William Edward Newton.
Manufacture of padded quilts and other articles - (*quilted petticoats.*)	2901	3rd Nov. 1870	Henry Armitage.
Manufacture or production of plain and fancy nets and laces. (*and flounces, frillings, &c.*)	3158	1st Dec. 1870	William Carter.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PHOTOGRAPHY AND PHOTOGRAPHIC APPARATUS.			
Photography - - - - -	89	12th Jan. 1870	Thomas George Hemery.
An improved means or method of exhibiting names, photographs, views, designs or sketches in monuments, door or other knobs, boxes, walking sticks, umbrellas and various other articles. - - - - -	112	13th Jan. 1870	Joseph Wright. Joseph Cryer. Edwin Rhodes.
Preparation of paper or other surfaces for the production or manufacture of pictures by photography.	201	22nd Jan. 1870	John Robert Johnson.
An improved method of producing surfaces by the aid of photography.	346	7th Feb. 1870	Walter Bentley Woodbury.
Improvements in the production of photographic pictures or designs on veneers and solid wood, and in the application thereof to cabinet work, furniture, fancy wood articles and other decorative purposes. - - - -	383	9th Feb. 1870	Arthur Foley. Henry Foley.
Improved means of preventing impersonation - (*by photographed portraits on cards, &c.*)	385	9th Feb. 1870	Charles Baylis.
Producing photographic pictures on tissues or fabrics.	802	18th March 1870	Charles Janicot.
An improved album or device for containing photographic or other pictures.	855	23rd March 1870	Middleton Chapman.
Improvements in photography by processes which combine printing, painting and transferring for the production of chromo-photographs.	941	31st March 1870	William McCraw.
Improvements in printing, lithographing and zincographing, and in the production of imitation photographic and also coloured designs on textile fabrics and paper, and in the means or apparatus employed therefor.	954	1st April 1870	Walter Mac Lean.
Improvements applicable to cabinet stereoscopes and other similar apparatus.	1318	9th May 1870	George Stothert Penny, M.R.C.S.
Apparatus for photographic printing - -	1333	10th May 1870	Benjamin Joseph Edwards.
Cases or receptacles for needles, pins, matches, pens, cards, stamps, photographs, cotton and other similar articles.	1473	21st May 1870	William Avery.
Construction of roofs and sides of houses and other structures. (*photographic operating rooms.*)	1718	15th June 1870	William Jeffrey Hopkins.
An improved method of producing surfaces by the aid of photography.	2171	4th Aug. 1870	Walter Bentley Woodbury.
Improvements in obtaining proofs or impressions from printing surfaces produced by photography, and also in obtaining such printing surfaces.	2266	16th Aug. 1870	Frederick Richard Window.
A novel application of stereoscopic views to match-boxes and other boxes or cases.	2408	3rd Sept. 1870	Hippolyte Fontaine.
Manufacture of casting blocks and printing blocks used for heliographic and other printing. - (*casine for photography.*)	2464	13th Sept. 1870	George Baldock. Thomas James Denne. August Hentschel.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PHOTOGRAPHY, &c.—*continued.*			
Photo-mechanical printing - - -	2485	15th Sept. 1870	Ernest Edwards.
Preparation of surfaces adapted for painting photographic and other printing.	2948	9th Nov. 1870	William Vincent Wallace.
Preparation of printing surfaces in photo-mechanical printing.	3036	19th Nov. 1870	John Robert Sawyer.
PICTURES, PORTRAITS AND MINIATURES; PICTURE-FRAMES.			
An improved means or method of exhibiting names, photographs, views, designs or sketches in monuments, door or other knobs, boxes, walking sticks, umbrellas and various other articles. - - - - -	112	13th Jan. 1870	Joseph Wright. Joseph Cryer. Edwin Rhodes.
Improvements in the production of photographic pictures or designs on veneers and solid wood, and in the application thereof to cabinet work, furniture, fancy wood articles and other decorative purposes. - - - - -	383	9th Feb. 1870	Arthur Foley. Henry Foley.
Improved means of preventing impersonation - (*by photographed portraits on cards, &c.*)	385	9th Feb. 1870	Charles Baylis.
Methods of manufactures and combinations therewith of processes for producing pictorial, ornamental and other designs and devices.	600	1st March 1870	Benjamin George George.
Producing photographic pictures on tissues or fabrics.	802	18th March 1870	Charles Janicot.
A new or improved self-acting indicator or machine for shewing the times of trains to arrive at and depart from railway stations, points and crossings, for the better prevention of accidents, applicable also for other purposes. - - (*for exhibition of pictures, dioramic exhibitions, &c.*)	1739	17th June 1870	William Ambler. Benjamin Jowett.
Manufacture of mosaic plaques or slabs suitable for external and internal decorations. (*producing pictures or designs.*)	1744	17th June 1870	Colin Minton Campbell.
Manufacture of frames for photographs and other similar objects of art.	1842	28th June 1870	William Joshua Clarke.
Improved means of exhibiting in the open air advertisements, photographic views, portraits or pictures, and also for decorating the fronts of theatres and other buildings.	2202	8th Aug. 1870	Jean Marie Auguste Lacomme.
Apparatus for suspending pictures and other articles	2499	16th Sept. 1870	James Atkins.
Lockets and other articles for the reception of portraits, inscriptions or devices.	3072	24th Nov. 1870	Edmund Barker.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PIGEON-SHOOTING.			
Improved apparatus in connection with the ariel top, and which is applicable to other purposes. (*shooting a "gyro-pigeon."*)	150	18th Jan. 1870	George Gibson Bussey.
An improved apparatus to be used as a substitute for bird-trap shooting.	1933	7th July 1870	George Gibson Bussey.
Pigeon traps from which pigeons are shot, and in the apparatus for and mode of "letting off" the same, by which means secrecy is ensured as to which trap is opened.	2053	20th July 1870	St. Thomas Baker.
PILE-DRIVING AND DRAWING.			
Piles for engineering purposes - - - (*Communicated by Thomas W. H. Moseley and Frederick Allen Leigh.*)	1498	24th May 1870	Evan Leigh.
Improvements in pneumatic stamps and hammers, also applicable to machinery for driving piles, cutting, splitting or dressing stone and for boring rocks.	2011	16th July 1870	William Husband.
Ground or earth screws - - -	2466	13th Sept. 1870	George Wells.
Improvements in the construction of bridges, viaducts, roofs and floorings, and in apparatus for the purpose.	2855	31st Oct. 1870	Julius Roberts.
PILLARS, COLUMNS, POSTS, SLABS, VASES; STATUARY.			
An improved means or method of exhibiting names, photographs, views, designs or sketches in monuments, door or other knobs, boxes, walking sticks, umbrellas and various other articles.	112	13th Jan. 1870	Joseph Wright. Joseph Cryer. Edwin Rhodes.
Letter boxes, letter pillars and such like depositories.	206	22nd Jan. 1870	William Dennis.
Apparatus for moulding flanged and socket pipes and columns. - - - -	654	5th March 1870	Enoch Openshaw Taylor. George Field.
Improvements in enamelling stone and articles composed of burnt clay, and in the enamel to be employed therein. (*slabs, &c.*)	712	10th March 1870	Thomas West Walker.
Manufacture and ornamentation of articles of glass (*ornamenting vases.*)	1420	17th May 1870	Thomas George Webb.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PILLARS, &c.—*continued.*			
Apparatus for grinding or polishing plate glass or slabs of slate, stone, marble or other substances.	1545	27th May 1870	Percy Graham Buchanan Westmacott.
An improved method of incorporating metal and cement in the construction of tanks, boxes, vases or pots for horticultural and other purposes, water and other pipes and conduits, artificial ponds, reservoirs, basins and rivulets, embankments of watercourses and analogous works. (*Communicated by Joseph Monier.*)	1999	15th July 1870	William Edward Gedge.
Mode of training hops, the sockets for the poles or posts of same, and other posts, applicable also for the boring for water. (*Communicated by Eduardo Blythe.*)	2705	13th Oct. 1870	David Monroe Childs.
An improved ground anchor to form the base of a straining post telegraph post, also applicable to any other purpose where great strain is required.	2775	21st Oct. 1870	James Robert Williams.
Production of ornamental work in glass, combined or not with metals, porcelain and other like substances. - - - - - (*stems for vases.*)	2970	11th Nov. 1870	Stephen Tuddenham. Alexander Robert Eyre.
Improvements in making moulds for casting and in apparatus therefor. (*columns.*)	2977	12th Nov. 1870	John Page.
Preparing and applying slate to useful and ornamental purposes. (*for decorating vases.*)	3275	14th Dec. 1870	William Boggett.
PINS AND NEEDLES.			
Needles and needle arms for sewing-machines - (*Communicated by Mrs. Mary Pemellaia Carpenter.*)	182	20th Jan. 1870	William Robert Lake.
Sewing-machine needles and needle arms - - (*Communicated by George Albert Lloyd.*)	294	1st Feb. 1870	William Robert Lake.
An improvement in the manufacture of needles - (*Communicated by Robert Jordan Roberts.*)	550	24th Feb. 1870	Alfred Vincent Newton.
An improvement in wrappers for papering needles, and a new or improved instrument or apparatus for measuring or counting needles for papering.	1178	22nd April 1870	Victor Milward.
An improved needle wrapper - - -	1322	9th May 1870	Thomas Banks.
Improvements in rolling metallic rods or wire and in machinery employed for that purpose. (*for sewing-machine needles.*)	1454	19th May 1870	James Partridge Blake.
Cases or receptacles for needles, pins, matches, pens, cards, stamps, photographs, cotton and other similar articles.	1473	21st May 1870	William Avery.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PINS, &c.—*continued.*			
Improvements in walking-sticks, and in sticks or handles for umbrellas, parasols and sunshades, and in certain other portable articles mainly composed of wood or cane. (*needle cases.*)	1736	17th June 1870	Charles August Bluemel.
Machinery or apparatus for reducing wood, metal or other hard material to fixed patterns. (*crochet needles.*) (*Communicated by Frederick Baldwin.*)	1987	14th July 1870	Giovanni Sconcia.
An improved sewing-machine - - - (*needles.*) (*Communicated by John Paulding.*)	2166	3rd Aug. 1870	William Robert Lake.
A novel application of stereoscopic views to match boxes and other boxes or cases. (*cases for needles and pins.*)	2408	3rd Sept. 1870	Hippolyte Fontaine.
Sharpening and polishing sewing machine needles (*Communicated by Eduardo E. Blyth.*)	2541	22nd Sept 1870	David Monroe Childs.
Improvements in combing and preparing cotton, wool and other fibrous substances, and in engines or machines in connection therewith. (*form of needles.*) (*Communicated by Edouard Tavernier.*)	2691	12th Oct. 1870	Louis Ferdinand Tavernier.
Flat pins used in machinery for preparing and combing wool, jute, flax, silk, cotton and other fibrous materials. - - - -	2747	19th Oct. 1870	James Rhodes. John James Richardson.
Machinery for the manufacture of toilet or dress pins and other pins. - - -	2756	20th Oct. 1870	William Twining. Joseph Dangerfield.
Needle cases or needle holders - -	2852	29th Oct. 1870	Richard Bourne Turner. Joseph Welch.
Needle cases - - - -	3006	16th Nov. 1870	Joseph Welch.
Improvements in hardening steel pens and other steel articles and in apparatus employed for that purpose. (*needles.*)	3023	18th Nov. 1870	Richard Hipkiss.
PIPES, TUBES AND SYPHONS; TOBACCO-PIPES; JOINING PIPES.			
Packing of pistons, glands, pipe and other joints -	47	6th Jan. 1870	George Dominicus Kittoe. Peter Brotherhood.
Pipes for smoking - - - -	120	14th Jan. 1870	Edward Cottam.
Improvements in the manufacture of lead-encased tin pipes and in apparatus employed in such manufacture.	147	18th Jan. 1870	Hiram Haines.
Improvements in apparatus for the passage and control of cables and other chains and in apparatus for auxiliary propulsion. (*sliding hawse pipe and plug.*)	175	20th Jan. 1870	James Maze Kilner.
Pipe joints - - - -	227	25th Jan. 1870	John Strain.
Pipes for smoking tobacco - - -	233	26th Jan. 1870	William George Robinson Penley.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PIPES, &c.—*continued.*			
Subaqueous communications and apparatus for effecting the same. (*construction of tubes.*)	403	11th Feb. 1870	John Imray.
Improvements in the manufacture or production of metallic pipes and sheets and in making joints therefor.	436	15th Feb. 1870	John Weems. William Weems.
Improvements in steam and other boilers, and superheating, condensing, refrigerating and evaporating vessels and apparatus, and in the plates and tubes employed.	449	16th Feb. 1870	Thomas Webster Rammell.
Means of preventing the bursting of water pipes by the action of frost.	480	18th Feb. 1870	Clement Heaton.
Improvements in pipes, gutters, troughing and other apparatus for irrigating and manuring land, and in girders and framing for supporting the said apparatus and for other purposes.	503	21st Feb. 1870	Edwin Maw.
Improvements in the manufacture of gas and in obtaining residual products from such manufacture, and in apparatus to be used in such manufacture. (*connecting ends of condenser and heater pipes.*)	510	21st Feb. 1870	Frank Clarke Hills.
Manufacture of stocks for screwing and cutting iron pipes, bolts and other similar uses.	525	23rd Feb. 1870	George Leech.
Manufacture of non-conducting material for preventing the radiation of heat. (*covering for steam pipes.*)	531	23rd Feb. 1870	Charles Henry Aston.
Manufacture of copper tubes, and also of copper rollers for calico printing, embossing and similar uses.	554	24th Feb. 1870	James Balleny Elkington. Charles Edwin Ryder.
Apparatus for moulding flanged and socket pipes and columns.	654	5th March 1870	Enoch Openshaw Taylor. George Field.
Construction of steam and hot-water boilers and coils in sections.	695	9th March 1870	Thomas Seaville Truss.
Improvements in friction lights and in apparatus to be employed therewith. (*caps used as pipe prickers, &c.*)	755	15th March 1870	William Henry Samuel.
Dies or tools used in drawing metallic tubes	783	16th March 1870	John Watkins.
Certain improvements in elastic rolls or tubing for clothes wringers and various other purposes as well as in machinery for manufacturing the same.	786	16th March 1870	Joel Moulton.
The application of cork for preventing loss of heat by radiation, and also for protecting bodies against heat. (*casing steam pipes, conduits, &c.*)	791	17th March 1870	Germond de Lavigne.
Improvements in or applicable to machinery for spinning and twisting fibrous substances. (*forming tubes for carrying bobbins.*)	900	28th March 1870	John Hopkinson. Robert Newton.
Improvements in reducing metal rods, bars and tubes, and in apparatus in connection therewith.	917	29th March 1870	Hesketh Hughes.
Tube cutters and screw stocks	978	2nd April 1870	Henry James Taylor Piercy.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PIPES, &c.—*continued.*			
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation and preserving wood and other materials. (*used on conducting pipes.*)	986	4th April 1870	Achille Thomas Anquetil.
Improvements in treating copper, zinc, tin and their compounds, and in obtaining metallic compounds or alloys suitable for various useful and ornamental purposes. (*for tubes.*)	1118	16th April 1870	Andrew Linmere Dowie.
An improved distributing apparatus to be applied to garden hose syringes and for other like purposes.	1132	19th April 1870	Samuel Barton, the younger.
Improvements in the manufacture and in the securing of tubes, taps and plugs in boilers and other vessels, also in certain modes of regulating and stopping the flow of liquids, gases or air into or from such vessels.	1180	22nd April 1870	Charles Lungley.
Boilers, air heaters, steam condensers and analogous constructions for transferring heat from one fluid to another. (*form of pipes.*)	1191	25th April 1870	Samuel Dyer Tillman.
Arrangement of pipes for drawing liquids from casks and other vessels.	1213	27th April 1870	Francis Joseph Ortner.
An improved combined self-closing stopper and whistle for the mouth-pieces of speaking tubes, which stopper may also be adapted to bottles and other vessels and to cocks, taps and other articles for regulating the flow of liquids.	1258	2nd May 1870	James Leetch.
Improving the sanitary construction of tobacco pipes arranged for the purpose of entirely preventing the nicotine juice from entering the mouth of the smoker, and to form means of egress for such juice. - - - -	1305	7th May 1870	William Thomas Blake. Michael Hyams.
A new or improved drain pipe rest and subsoil drain.	1306	7th May 1870	Henry Brooke.
An improved gas and water-tight joint to pipes and tubes.	1342	11th May 1870	Jules Crouzières.
Manufacture and application of a composition or compositions for preserving the surfaces of walls, metals, wood and other materials. (*covering steam and hot water pipes.*)	1379	14th May 1870	Prosper Pimont.
Improvements in the manufacture of welded iron or steel tubes and in the means or apparatus employed in such manufacture.	1435	18th May 1870	Edward Peyton.
Manufacture of metallic bedsteads, sofas, couches or other articles for sitting or reclining upon. (*of welded iron or steel tubes.*)	1436	18th May 1870	Edward Peyton.
Tobacco pipes and cigar holders - -	1459	20th May 1870	George Gatton Melhuish Hardingham.
Mode of supplying lamps or lanterns with atmospheric air for supporting their illuminating flames. (*constructing the feeding tubes.*) (*Communicated by John Henry Irwin.*)	1485	23rd May 1870	Martin Benson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PIPES, &c.—*continued.*			
Machinery or apparatus for making metal cop tubes. (*Communicated by James Eaton.*)	1503	24th May 1870	John Henry Johnson.
Connections for fire-engine hoses and other pipes - (*Partly communicated by Montgomery Gibs.*)	1508	24th May 1870	Loftus Perkins.
Improvements in the manufacture of sockets and ferrules of wrought iron and other metals and in machinery employed for that purpose. (*Communicated by Robert Briggs.*)	1569	30th May 1870	Charles Denton Abel.
Improvements in the manufacture of wrought metal tubes and in machinery or apparatus employed for that purpose. (*Communicated by Robert Briggs.*)	1570	30th May 1870	Charles Denton Abel.
Apparatus for drawing tube skelps - - (*Communicated by Robert Briggs.*)	1571	30th May 1870	Charles Denton Abel.
Compounds for insulating telegraph wires, the manufacture of flexible tubing and other like purposes.	1626	4th June 1870	Daniel Spill.
Treatment of slag and other vitreous material - (*for covering pipes.*) (*Communicated by Henry Baldwin, jun.*)	1644	7th June 1870	George Tomlinson Bousfield.
Machinery or apparatus for testing strain or pressure applied to solid bodies and for other like purposes. (*tubes.*) (*Communicated by Jules Auguste Deygoffe.*)	1649	7th June 1870	William Robert Lake.
Means of propelling ships and vessels - - (*by hydrostatic pressure power tubes.*)	1663	9th June 1870	William Long Wrey.
Steam boilers - - - - - (*Communicated by John Benjamin Root.*)	1675	9th June 1870	William Edward Newton.
An improved joint for water, gas and steam pipes - (*Communicated by Henri Alexandre Roche.*)	1682	11th June 1870	Bristow Hunt.
Improvements in the manufacture of clay or earthenware pipes and in the mechanism employed therefor.	1715	15th June 1870	Robert Miller.
Harmoniums and other reed instruments of music - (*Communicated by George William Scribner.*)	1722	16th June 1870	Edwin C. Rolls.
Improvements in smelting iron and other ores and in the apparatus employed therefor. (*construction of air pipes.*)	1790	23rd June 1870	Andrew Barclay.
Improvements in the manufacture of welded iron and steel tubes and in apparatus therefor. -	1799	24th June 1870	Andrew Stewart. James Stewart.
Construction of pipes for smoking - - (*Communicated by H. M. Assam.*)	1835	28th June 1870	John Frydendahl Hoffgaard.
Apparatus for discharging water and air from steam pipes and apparatus.	1888	4th July 1870	John Shanks.
Apparatus to be used in making tubes - -	1907	6th July 1870	John Robertson.
Improvements in the manufacture of iron tubes and in machinery employed therein, applicable also to the manufacture of tubes of other metals.	1980	13th July 1870	Henry Kesterton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PIPES, &c.—*continued.*			
An improved method of incorporating metal and cement in the construction of tanks, boxes, vases or pots for horticultural and other purposes, water and other pipes and conduits, artificial ponds, reservoirs, basins and rivulets, embankments of watercourses and analogous works. (*Communicated by Joseph Monier.*)	1999	15th July 1870	William Edward Gedge.
Machinery for moulding clay and other plastic materials into drain pipes and other articles. (*Communicated by Philip Syng Justice.*)	2000	15th July 1870	Henry Woodcroft Hammond.
Nozzles for pipes used in watering gardens and similar purposes.	2198	8th Aug. 1870	Jean Nadal.
Production of cast-iron pipes, columns and other similar castings.	2242	12th Aug. 1870	William Oliver Johnston.
Tobacco pipes - - - - -	2252	13th Aug. 1870	Charles August Constantin Eckhold.
Improvements in drawing and bending sheet metal and in the machinery or apparatus therefor. (*forming tubes.*)	2257	13th Aug. 1870	James Robertson.
Improvements in the manufacture of "spool" tubes and other tubes of paper, and in dyeing or coloring and marking the same, and in machinery or apparatus to be employed therefor.	2292	19th Aug. 1870	William Ambler.
Manufacture of thin lead pipes for use in irrigation purposes.	2332	25th Aug. 1870	Isaac Brown.
Stoppers for bottles, jars, casks and other vessels and tubes, and implements connected therewith.	2370	30th Aug. 1870	Francis Coombes.
Improvements in pipe joints or couplings, applicable also to couplings for rods and shafting. (*Communicated by William Clare Allison.*)	2433	8th Sept. 1870	John Henry Johnson.
A new or improved tube expander and tube cutter combined.	2434	8th Sept. 1870	Treat Timothy Prosser.
Tobacco pipes - - - - -	2450	10th Sept. 1870	James Woodawiss Rhodes
An improved mode of and means for electro-plating the interior of lead and other metal tubes or pipes.	2491	15th Sept. 1870	Hamilton E. Towle.
Construction of tunnnels and tubes - -	2543	22nd Sept. 1870	Thomas Barnabas Daft. Charles Edward Crawley.
Improvements in the construction of drain pipes, and in the mode of obtaining access thereto for forming connections therewith or for cleansing or examining the same.	2570	26th Sept. 1870	Herbert John Jones.
Blacking or painting pipes and tubes and the moulds in which they are formed.	2582	28th Sept. 1870	Samuel Woodhall.
Portable apparatus for manufacturing gas - (*hydraulic main.*)	2591	29th Sept. 1870	George Symes.
New or improved modes of and means or apparatus for utilizing the power and heat of the steam used in motive-power engines and for other purposes. (*construction of heat tubes.*) (*Communicated by Treat Timothy Prosser.*)	2608	1st Oct. 1870	William Richard Middlemore Thomson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PIPES, &c.—*continued.*			
Applying tubes of paper or other material to spindles of mules and other spinning or doubling machines.	2617	1st Oct. 1870	Frederick Wilkinson.
Improvements on electro-dynamic apparatus for keeping off thieves. - - - - (*protecting pipes.*)	2645	6th Oct. 1870	Dr. Otto Burg. August Schiebel.
Manufacture of tobacco pipes - - -	2661	7th Oct. 1870	Josiah Glode Stapelton.
Improvements in the manufacture of boots and shoes or other coverings for the feet, parts of which improvements are also applicable in the manufacture of millstraps or bands, harness, hose pipes and other similar articles, and in the machinery, apparatus or means to be used for effecting such purposes.	2698	12th Oct. 1870	Thomas White.
An improved manufacture of combined lead and tin pipes.	2739	18th Oct. 1870	Norman Stewart Walker.
Water-heating apparatus - - -	2771	20th Oct. 1870	Joseph Russell.
Construction and manufacture of brushes for tube cleaning and other similar purposes. - -	2808	25th Oct. 1870	William Henry Edwards. Alfred Edwards.
Steam boilers or generators - - -	2818	27th Oct. 1870	James Stead Crosland.
Outlet or jet pipes of fire engines, high-pressure mains and other apparatus. (*Communicated by Jan Anthony Muller.*)	2820	27th Oct. 1870	Edward Thomas Hughes.
Rolling and finishing circular metal plain or irregular rods and tubes. - - -	2856	31st Oct. 1870	George Walter Dyson. Henry Arthur Hall.
An improved silicious compound applicable for the manufacture of pipes, tiles, bricks and other articles for buildings, also for paths, floors, roofs and other analogous purposes. (*Communicated by William Augustus Battersby, Timothy Reed Crawford and Robert Brown.*)	2863	31st Oct. 1870	William Edward Newton.
Modes, means or apparatus for or connected with the manufacture of malleable iron or steel tubes and like structures.	2869	1st Nov. 1870	Andrew Ballantyne.
Improvements in pipes and in the means of connecting them together.	2915	4th Nov. 1870	John Somerville.
Improvements in or additions to apparatus employed in the production of lead, lead-encased, block-tin and other soft-metal pipes from ingots.	2919	5th Nov. 1870	Norman Stewart Walker.
An improved metallic composition for roofing linings, pipes and other purposes. (*Communicated by David Johnson Millard.*)	2935	7th Nov. 1870	William Edward Newton.
Machinery for raising and forcing fluids - - (*elbow pipe.*)	2972	12th Nov. 1870	Richard Potter Pearn. Frank Kelsey Pearn.
Improvements in making moulds for casting and in apparatus therefor. (*pipes.*)	2977	12th Nov. 1870	John Page.
Improvements in the manufacture of curved metal pipes, and in apparatus employed therein. -	3081	24th Nov. 1870	John Penn, junr. William Hounsell.
Construction of sheet metal elbows or curved pieces for pipes or tubes. (*Communicated by Frederick Hoeltge.*)	3143	30th Nov. 1870	George Haseltine.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PIPES, &c.—*continued.*			
Improvements in the manufacture of taper tubes and rods, and in apparatus employed therein.	3156	1st Dec. 1870	Henry Kesterton.
Construction of irrigation conduits or channels for the conveyance and distribution of sewage and other waters.	3159	1st Dec. 1870	Henry Doulton.
Improved means for securing the joints of steam-boilers and tubes. - - - -	3206	6th Dec. 1870	James Howard. Edward Tenney Bousfield.
A new system for constructing iron ships of war, &c. to be impervious to shot, combined with the true and only method for production and resistance of ram power. (*constructing tubes.*)	3231	9th Dec. 1870	Edmund Beatty Lockyer.
Steam-boilers - - - - - - (*cylindrical tubes.*)	3249	12th Dec. 1870	John Hosking. John Morrison.
Apparatus for making tubes - - -	3278	14th Dec. 1870	John Marshall.
Manufacture of hollow metals, and dished, sunken or tubular shapes or forms in metal - -	3354	22nd Dec. 1870	William Thomas Watts. Daniel Joseph Fleetwood.
Improvements in the manufacture of welded iron and steel tubes and in apparatus therefor. -	3360	23rd Dec. 1870	Andrew Stewart. James Stewart. John Wotherspoon.
Improvements in steam generators and in furnaces therefor. (*cap of suspended tubes.*) (*Communicated by S. Lloyd Wiegand.*)	3390	29th Dec. 1870	William Robert Lake.
Machinery for manufacturing metal tubes - (*Communicated by Stephen Paschall Morris Tasker.*)	3391	29th Dec. 1870	William Robert Lake.
For cop-tubes, *see* "BOBBINS."			
PISTONS AND PISTON PACKINGS.			
Packing of pistons, glands, pipe and other joints -	47	6th Jan. 1870	George Dominicus Kittoe. Peter Brotherhood.
Metallic packing for stuffing boxes - -	435	15th Feb. 1870	Robert Francis Fairlie.
Atmospheric stamps and hammers, partly applicable to other purposes. (*packing the piston.*)	749	15th March 1870	William Husband.
Certain improvements in elastic rolls or tubing for clothes wringers and various other purposes, as well as in machinery for manufacturing the same. (*using fibrous strands as packing for pistons.*)	786	16th March 1870	Joel Moulton.
Improvements in meters for measuring fluids and in packings and counting apparatus to be used therewith, parts of which improvements are applicable to other purposes. (*packing for pistons.*)	965	2nd April 1870	Henry Law.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PISTONS, &c.—*continued.*			
Stuffing boxes - - - - - - (*for piston heads.*)	1380	14th May 1870	Charles Ross Simey.
Manufacture of bearings, slides and packings for steam-enginss and other machinery. (*Communicated by Eliza Dexter Murfey.*)	1401	16th May 1870	John Henry Johnson.
An improved packing for pistons, piston rods and other rods.	1665	9th June 1870	John Scaife.
Rotary engines and pumps - - - (*packing the pistons and plates.*)	1679	10th June 1870	Robert Thomas Yeadon Johnson.
Improvements in steam and other vessels, and in steam-engines, steam boilers and propellers applicable thereto, parts of which improvements are adapted for other purposes. (*Communicated by James Montgomery.*)	1691	11th June 1870	Benjamin Joseph Barnard Mills.
Pumping or forcing apparatus for hydraulic presses and for compressing or exhausting elastic fluids.	1947	9th July 1870	Thomas Bruce.
Improvements in packings and in bearing surfaces, and in the preparation or treatment of materials composing the same. (*piston packing.*) (*Communicated by Eliza Dexter Murfey.*)	1997	14th July 1870	John Henry Johnson.
Means and apparatus for working brakes for the rolling stock of railways and tramways, as also for working feed-water pumps in connection therewith. (*piston head and stem.*) (*Communicated by George Westinghouse, junior.*)	2235	11th Aug. 1870	Charles Denton Abel.
Machinery for compressing air - - - (*air-pump pistons.*) (*Communicated by Charles Burleigh.*)	2258	13th Aug. 1870	Thomas Brown.
Improvements in steam, air and gas, and in fluid or hydraulic engines. (*construction of pistons.*)	2554	23rd Sept. 1870	William Firth.
Working of locomotive engines - - - (*lubricating pistons and packing.*)	2612	1st Oct. 1870	Joseph Ward.
Single cylinder steam or other motive power engines.	2684	11th Oct. 1870	James Shand.
Machinery for drilling or boring rocks and other mineral substances in mining, tunnelling, quarrying and other like operations.	3131	29th Nov. 1870	Fenner Ballou Taylor.
Portable and other steam-engines - - (*packing piston valves.*)	3186	3rd Dec. 1870	Edward Rush Turner.
PLANTS, TREES, SEAWEEDS, &c. (*Treatment of.*)			
Making paper - - - - - - (*applying oat husks.*)	234	26th Jan. 1870	William Hay.
Machinery for preparing flax and other fibrous materials for manufacturing purposes, but specially adapted for the preparation of the grass known as "crin."	337	5th Feb. 1870	Henry Gardner.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PLANTS, &c.—*continued.*			
A method of producing an improved black pigment and obtaining phosphates and other substances from the waste portions of the hop plant. (*Communicated by Frederic Rotter.*)	515	22nd Feb. 1870	William Robert Lake.
Treatment of certain fibrous substances to be used in the manufacture of paper pulp for paper and for conversion into textile fabrics. (*bamboo.*)	587	28th Feb. 1870	Charles Duff.
Preparing, treating and purifying fibrous vegetable and fibrous animal substances. (*china grass, jute, hemp, &c.*)	588	28th Feb. 1870	Thomas Cattell.
Preparing Iceland and Irish moss for use as a food. (*Communicated by William James Rand.*)	948	31st March 1870	Alfred Vincent Newton.
Treatment of esparto grass and other fibrous materials.	1525	26th May 1870	George Lunge.
A new or improved machine for dressing and separating the fibres of certain fibrous substances, the same being specially applicable for treating rhea or china grass. (*treating rhea or china grass.*) (*Communicated by John Greig, the younger.*)	1690	11th June 1870	David Greig. John Greig.
Production of filamentous matter suitable for spinning from sundry plants. (*Communicated by August Deininger.*)	2141	1st Aug. 1870	Frederick Arthur Paget.
Improvements in the mode of extracting the filaments of straw and the bark of the mulberry tree and in converting the same into pulp for the manufacture of paper, and in the apparatus therefor.	2190	6th Aug. 1870	Gustave Demailly.
Improvements in the production of pulp suitable for the manufacture of paper from wood, straw, grass and other vegetable matter. (*Communicated by August Deininger.*)	2310	22nd Aug. 1870	Frederick Arthur Paget.
Improvements in the treatment of certain fibrous substances to be used in the manufacture of paper pulp for paper and for conversion into textile fabrics.	2351	27th Aug. 1870	Charles Duff.
Treating lichens or moss in order to obtain sugar or saccharine matter and spirit therefrom. (*Communicated by Henry Shield.*)	3250	12th Dec. 1870	John Clayton Newburn.
Improvements in materials for the manufacture of paper, also applicable for other purposes.	3385	28th Dec. 1870	Augugtus Henry Thurgar. Charles Henry Capon.
Improvements in paper stock and means or method of making paper pulp from wood, straw, cane, esparto grass, flax, flax tow, hemp, hemp tow, jute, jute tow, Manilla rope or Manilla tow, and all analogous material or vegetable substances, and in the treatment of materials used therein, and in apparatus for treating the same.) (*Communicated by Morris Longstreth Keen.*)	3392	29th Dec. 1870	Samuel Armstrong Walsh.

See also "FIBRES."

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PLATES, DISHES, CUPS AND SAUCERS; SALT CELLARS, TRAYS; CRUET-FRAMES.			
Enamels for pottery, earthenware and crockery - (*Communicated by Joseph Boès and Louis Esprit Joseph Gallibert.*)	618	2nd March 1870	John Henry Johnson.
Means and utensils employed with apparatus used in cooking, combining arrangements for burning a light, forming a complete "kitchener." (*constructing baking dishes.*)	658	5th March 1870	Ebenezer Stevens.
The application of cork for preventing loss of heat by radiation, and also for protecting bodies against heat. (*casing receptacles of hot food.*)	791	17th March 1870	Germond de Lavigne.
Covers for dishes and plates and other articles and vessels. (*for sugar basins, mustard pots, &c.*)	1110	16th April 1870	Thomas White.
An improved combination of articles used for culinary purposes. (*dredger, nutmeg grater, &c.*) (*Communicated by Sydney Cooke.*)	1146	19th April 1870	Charlotte Cooke.
Production of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials. (*for rims of drinking cups.*)	1159	20th April 1870	George William Ley.
Manufacture and ornamentation of articles of glass (*ornamenting dishes.*)	1420	17th May 1870	Thomas George Webb.
Machinery or apparatus for washing plates, dishes, crockery and glass-ware. (*Communicated by J. L. Simonds.*)	1977	13th July 1870	William James Schlesinger.
Production of ornamental work in glass combined or not with metals, porcelain, and other like substances. - - - - (*stems for cups and epergnes.*)	2970	11th Nov. 1870	Stephen Tuddenham. Alexander Robert Eyre.
Certain improvements in castors for furniture and other purposes. (*for cruet and liqueur frames, cheese waggons, &c.*)	3068	23rd Nov. 1870	Richard Banton.
PLOUGHING, DIGGING, CLOD-CRUSHING, LAND-ROLLING, HARROWING; AGRICULTURAL IMPLEMENTS; TILLING AND CULTIVATING LAND.			
An improved mode of ploughing - - -	79	11th Jan. 1870	Ernest Gaillet.
Apparatus for ploughing, harrowing or cultivating land.	352	7th Feb. 1870	John Taylor.
Improved apparatus for steam cultivation - -	366	8th Feb. 1870	Robert Edwards.
Endless chain rotary digging machinery - -	426	12th Feb. 1870	Ormrod Coffeen Evans.
Improvements in ploughing and in ploughing implements.	491	19th Feb. 1870	Thomas Reid.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PLOUGHING, &c.—*continued.*			
Improved arrangements for applying steam power in cultivating land.	601	1st March 1870	Robert William Thomson.
An improved apparatus for producing rotary motion (*for agricultural implements.*)	615	2nd March 1870	Charles Ernest de Lorière.
Double furrow and other ploughs - -	662	5th March 1870	James Edward Ransome. John Robert Jefferies.
An improved machine for forming trenches or ditches. (*plough.*) (*Communicated by Henry Carter.*)	781	16th March 1870	William Robert Lake.
Improvements in the construction of two-furrow ploughs and in other tilling implements. - -	798	17th March 1870	James Davis. William Nash Davis.
Improved means and apparatus for guiding ploughs and also for regulating the depth of working of the same.	811	18th March 1870	William Woofe.
Horse hoes - - - - -	888	26th March 1870	William Henry Grassam.
Horse hoes - - - - -	981	4th April 1870	George Deadman.
Construction of agricultural, road, traction and portable steam-engines and tramway locomotives.	1037	8th April 1870	Thomas Aveling.
Ploughs - - - - -	1071	12th April 1870	James Howard.
Ploughs - - - - -	1169	22nd April 1870	John Gray.
Construction of harrows - - . -	1196	25th April 1870	Samuel Randall. John Randall.
Machinery or apparatus for tilling, ploughing, harrowing, digging and cultivating land.	1263	3rd May 1870	Henry Belmont.
Machinery or apparatus for breaking up, disintegrating or pulverising lumps or clods of soil in the process of agriculture.	1330	10th May 1870	Henry Aitken.
An improved steam machine for agricultural work and land transport of every kind. (*Communicated by Jean Baptiste Honoré Petitpierre.*)	1365	13th May 1870	William Edward Gedge.
Apparatus for ploughing or cultivating land -	1367	13th May 1870	Thomas Perkins.
An improved apparatus to be employed in the filling of water carts with water. (*tenders to agricultural steam engines.*)	1392	16th May 1870	Charles Wicksteed, junior.
Machinery for tilling or digging land and other earth works.	1457	19th May 1870	Mathieu Giraud.
A new or improved plough - - - (*Communicated by Pierre Mathurin Tanvez.*)	1554	27th May 1870	William Edward Gedge.
A new or improved agricultural implement - (*see* "SOWING.")	1564	28th May 1870	George Thomson Leitch.
Ploughs - - - - - -	1622	4th June 1870	John Robert Jefferies.
Machinery for cultivating land by steam or other power. - - - -	1667	9th June 1870	William Fisken. Thomas Robert Hay Fisken.
Ploughs - - - -	1841	28th June 1870	Thomas Corbett.
Ploughs - - - - -	2007	15th July 1870	Matthew Johnson.
Construction of double-furrow ploughs - -	2026	19th July 1870	Robert Sellar.
Improved apparatus for steam cultivation - -	2193	6th Aug. 1870	Robert Edwards.
Horse hoes - - - -	2343	26th Aug. 1870	Austin Hill.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PLOUGHING, &c.—*continued.*			
Means or apparatus employed in ploughing and tilling land.	2511	17th Sept. 1870	George Wilson Murray. George Mingay Garrard.
An improved machine for polishing metal and other surfaces. (*ploughs, cultivator teeth, &c.*) (*Communicated by Peter Fitz Randolph, Augustus Knapp Van Horne and Henry Vroon Voorhees.*)	2615	1st Oct. 1870	George Haseltine.
Apparatus for ploughing, harrowing, and sowing land when steam power is employed.	2725	15th Oct. 1870	David Greig. Max Eyth.
Ploughs	2727	17th Oct. 1870	Gilbert Murray.
Certain improvements in ploughshares	2767	20th Oct. 1870	Frank Parkes.
Entrenching or digging tools	2798	24th Oct. 1870	Jasper Henry Selwyn.
Ploughs	2847	29th Oct. 1870	Richard Hornsby. James Edwin Phillips.
Ploughs	2898	3rd Nov. 1870	James Howard. Thomas Phillips.
Machinery and apparatus for tilling land by steam and for other purposes.	2904	3rd Nov. 1870	Samuel Oram.
An improved steam machine for agricultural work and land transport of every kind. (*for ploughing.*) (*Communicated by Jean Baptiste Honoré Petitpierre.*)	2964	4th Nov. 1870	William Edward Gedge.
Machinery for tilling and cultivating the soil	2998	16th Nov. 1870	Henry Belmont.
Road and other rollers (*land rollers.*)	3013	17th Nov. 1870	Robert Balls Hughes.
Improvements in apparatus for ploughing and cultivating land by direct traction, part of which apparatus may also be used for driving thrashing and other machines.	3287	15th Dec. 1870	Thomas Wilkinson.
Machinery or apparatus for the cultivation of land and for other purposes.	3317	19th Dec. 1870	William Jeffrey Hopkins.
Attaching picks and other tools or implements to handles. (*hoes.*)	3361	23rd Dec. 1870	Joseph Jackman.
PONDS AND RIVULETS (*Artificial*).			
An improved method of incorporating metal and cement in the construction of tanks, boxes, vases or pots for horticultural and other purposes, water and other pipes and conduits, artificial ponds, reservoirs, basins and rivulets, embankments of watercourses and analogous works. (*Communicated by Joseph Monier.*)	1999	15th July 1870	William Edward Gedge.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRESERVING AND HARDENING WOOD, METAL, STONE, SKIN AND OTHER SUBSTANCES.			
Improvements in effecting the preservation of animal substances and in the production and employment of a new antiseptic. (*horn, hides, bones, &c.*)	60	7th Jan. 1870	John Gamgee.
An improved composition for preventing the fouling of iron and other ships' bottoms and for preserving metal and other surfaces. - -	370	8th Feb. 1870	William Davison. William Richards.
Improvements in the treatment of hides and skins in tanning and otherwise utilizing all portions or pieces thereof, and in the treatment of goods already tanned. - - - - (*indurating.*)	863	24th March 1870	Henry Richardson Fanshawe. William Henry Smith.
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation and preserving wood and other materials.	986	4th April 1870	Achille Thomas Anquetil.
Improvements in means and apparatus for seasoning, injecting, and preserving wood, part of which improvements is applicable for treating canvass, cordage and other substances to render them impervious to decay.	1041	8th April 1870	John Bennington Blythe.
Compositions for coating ships' bottoms and other like purposes, also applicable to stone and other building materials.	1096	14th April 1870	William Jesty.
Manufacture and application of a composition or compositions for preserving the surfaces of walls, metals, wood and other materials.	1379	14th May 1870	Prosper Pimont.
Hardening, preserving and facing stone, chalk, brick and other building materials. - -	1494	24th May 1870	Henry Cockburn Milne Ximenes. Edward Betincourt.
Ropes and cables - - - - (*protecting from decay.*)	1507	24th May 1870	Robert Henry Pounds.
An improved metallic paint for preventing the corrosion and fouling of ships' bottoms and other surfaces in water. (*protective paint for wood or iron surfaces.*) (*Communicated by James Gamage Tarr and Augustus Henry Wonson.*)	1638	6th June 1870	William Robert Lake.
Preparation of corks for rendering them impermeable and to preserve them from decay. (*Communicated by Auguste de Müller.*)	1670	9th June 1870	Charles Denton Abel.
Improvements in and apparatus for preserving animal and vegetable substances. (*Communicated by Edward Robert Kent.*)	1848	29th June 1870	Edward Griffith Brewer.
Preparation and treatment of wood to preserve the same from decay. (*Communicated by Archibald B. Tripler.*)	2159	2nd Aug. 1870	William Robert Lake.
A new or improved composition for preserving iron and steel from rust.	2206	9th Aug. 1870	Edward John Powell.
Coating metal sheathing and other surfaces exposed to the action of sea water in order to preserve them and keep them clean.	2318	23rd Aug. 1870	William John Hay.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRESERVING AND PREPARING ARTICLES OF FOOD, CURING BACON, CUTTING AND MINCING MEAT; SAUCES, CONDIMENTS AND PICKLES; PARING CUCUMBERS, STONING RAISINS.			
Improvements in effecting the preservation of animal substances and in the production and employment of a new antiseptic. (*flesh, fat and fish.*)	60	7th Jan. 1870	John Gamgee.
An improved process and solution for preserving meat and other perishable substances.	148	18th Jan. 1870	Thomas Chubb Sloggett.
An improved process for preserving bread in a reduced bulk. (*Communicated by Jean Joseph Auguste Mouriés.*)	184	21st Jan. 1870	William Edward Gedge.
Preparing blocks of animal and vegetable materials for making soup or other liquid food.	202	22nd Jan. 1870	Herbert Maquire Whitehead.
Apparatus for chopping or mincing animal, vegetable and other substances.	240	26th Jan. 1870	William Francis Dearlove.
A new or improved riddle specially adapted for cleansing and assorting potatoes.	316	3rd Feb. 1870	James Davenport, senior.
Machinery or apparatus for preparing lard -	338	5th Feb. 1870	William Thomas Shaw.
Preparation and preservation of animal and vegetable substances to be used as food and for other purposes, and in apparatus connected therewith.	430	14th Feb. 1870	Alfred Fryer.
Preparing Iceland and Irish moss for use as a food. (*Communicated by William James Rand.*)	948	31st March 1870	Alfred Vincent Newton.
Improved apparatus for filling glass bottles and jars with soups, jellies, fruits and other edibles for the purpose of preserving them, the said apparatus being also applicable for filling bottles with sauces, wines, spirits, beer, liqueurs and other still and effervescing beverages, also machinery in combination with the above apparatus for corking or stoppering such said bottles and jars.	989	5th April 1870	James Winter, the younger
Preservation of animal and vegetable substances to be used as food.	1009	6th April 1870	Richard Jones.
Structures for the preservation of fruits, vegetables, meats and other perishable articles. (*Communicated by Nathan Hellings.*)	1070	12th April 1870	John Henry Johnson.
Preservation of meats - - - - -	1350	11th May 1870	Francis Perry. John Isaac Bengough.
Preparing, clarifying and preserving vegetable juices and other liquids.	1371	13th May 1870	James Heddle.
An improved mode of and apparatus for preserving butter and other similar substances. (*Communicated by Messieurs Guichard and Son.*)	1458	19th May 1870	John Henry Johnson.
Improvements in certain parts of machines for mincing or minutely dividing meat, vegetables or other similar substances requiring to be minutely divided.	1509	25th May 1870	Charles Topham.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRESERVING FOOD, &c.—*continued.*			
An improved machine for breaking ice for the preservation of fish and other purposes.	1520	26th May 1870	Charles Emerson Barton.
Improvements in producing rotary motion, applicable to egg beaters, churns, bottle washers, washing-machines, drills, tools and other instruments. (*Communicated by M. W. Robinson.*)	1557	27th May 1870	William James Schlesinger.
An improved machine for decorticating fruits and vegetables.	1610	3rd June 1870	John Frank Rogers.
Construction of boxes or cases for containing eggs, glass, crockery or other articles requiring to be packed separately. (*Communicated by James McCree.*)	1786	23rd June 1870	William Spence.
Machinery or apparatus for mixing and kneading dough and other ingredients, and for working the same into bread, biscuits, and other pastry, and also applicable to other purposes. - - (*washing potatoes.*)	1809	25th June 1870	Stephen Norris. Thomas Griffiths.
An improved method of and apparatus for separating aqueous from oleaginous substances. (*from gravies, soups, broths, beef-tea, &c.*)	1845	28th June 1870	Henry Medlock.
Improvements in and apparatus for preserving animal and vegetable substances. (*Communicated by Edward Robert Kent.*)	1848	29th June 1870	Edward Griffith Brewer.
Apparatus for washing and peeling or removing the skin from potatoes.	1858	30th June 1870	Charles Topham.
Improvements in machinery or apparatus and vessels for feeding, dusting, stirring, mixing or kneading flour, and heating or boiling water or liquids, for the manufacture of bread, biscuits, cakes, puddings, paste, buns, muffins, crumpits, and other articles of food, which improvements are also applicable for beating and mixing, heating or boiling various ingredients or plastic substances, churning or other purposes.	1875	2nd July 1870	Ebenezer Stevens.
Preserving vegetable matter - - - (*see* "FOOD FOR CATTLE.")	2064	21st July 1870	Robert Thornton Shiells.
An improved mixture for preserving meat, fish, poultry, game, cheese and other like edibles.	2096	25th July 1870	William Gostwyck Gard.
An improved rotary machine for scraping and washing potatoes and other vegetables, and for cleaning dried fruits.	2279	18th Aug. 1870	Richard Derham.
Manufacture of fluid meat - - -	2312	22nd Aug. 1870	Stephen Darby.
Improvements in the packing of bacon, hams, and lard, and in the mode of preserving bacon and hams.	2346	26th Aug. 1870	John Morrell.
Improvements in apparatus for economizing the waste heat and gases from furnaces, and in means for generating, collecting and purifying gases, such gases being applicable to various useful purposes. (*applicable to preserving food.*)	2377	31st Aug. 1870	Thomas Atkins.
An improved method of preserving meat, fish and other alimentary substances.	2568	26th Sept. 1870	Henry Highton.
An improved process for preserving animal and vegetable substances in air-tight vessels.	2577	28th Sept. 1870	John Isaac Bengough.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRESSES, &c.—*continued.*			
Mechanism for diminishing friction. - - (*in presses.*) (*Communicated by Jean Baptiste Léopold Favier-Lagaye and Ernest Auguste Verleye.*)	942	31st March 1870	William Robert Lake.
An improved pressing machine for the use of tailors and others. - - - -	970	2nd April 1870	Israel Summersfield. John Glasgow Sanderson.
Reduction of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials. (*by pressure.*)	1159	20th April 1870	George William Ley.
Improvements in roofing tiles, and in the method of locking or fastening them together when being formed into a roof, and in the ridging for tiled roofs, and in the apparatus used in the manufacture of such tiles, fastenings and ridges, and also of articles used for similar purposes and for bricks. - - - - -	1173	22nd April 1870	Joseph Armytage Wade. John Cherry.
An improvement in wrappers for papering needles, and a new or improved instrument or apparatus for measuring or counting needles for papering.	1178	22nd April 1870	Victor Milward.
Mechanism for transmitting power and increasing the effectiveness of the same. - - - (*applied to presses.*)	1225	28th April 1870	Richard Bruno Hamel. James Brower Holden.
Buckles or bale ties - - - - (*Communicated by Eleazar Judson Beard.*)	1255	2nd May 1870	Alfred Vincent Newton.
An improved needle wrapper - - -	1322	9th May 1870	Thomas Banks.
Construction of pressing machines, applicable to pressing cheese and other articles.	1378	14th May 1870	Ralph Mellard.
Manufacture of bearings, slides and packings for steam-engines and other machinery. (*Communicated by Eliza Dexter Murfey.*)	1401	16th May 1870	John Henry Johnson.
An improved mode of and apparatus for preserving butter and other similar substances. (*packing.*) (*Communicated by Messieurs Guichard and Son.*)	1458	19th May 1870	John Henry Johnson.
Wire ties for securing bales of hay, cotton and other merchandize.	1464	20th May 1870	Daniel Cole Lowber.
An improved process and apparatus for preparing and finishing printed paper. - - -	1522	26th May 1870	John Appleton. Robert Craib Ross.
An improved thermo-press - - -	1558	27th May 1870	Ferdinand Tommasi.
Improvements in the manufacture of soles and heels for boots and shoes, and in apparatus employed in such manufacture. - - (*pressed leather, &c.*) (*Communicated by Laurent Hurtault.*)	1588	31st May 1870	William John Barron. Edmund Charles Barron.
Apparatus for compressing gunpowder and other substances into pellets.	1595	2nd June 1870	Jabez James.
Machinery for pressing bricks, tiles and other articles made of clay or other plastic substances.	1612	3rd June 1870	Charles Henry Murray.
Machinery for pressing cotton and other materials	1641	7th June 1870	Walter West. Daniel Kemp West.
Machinery for manufacturing wire ties for securing bales of hay, cotton and other merchandize.	1695	13th June 1870	Daniel Cole Lowber.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRESSES, &c.—*continued.*			
Machinery or apparatus for pressing and forming heels for boots and shoes, and for other like purposes. (*Communicated by Horace Holley Bigelow.*)	1709	15th June 1870	John Henry Johnson.
Construction of boxes or cases for containing eggs, glass, crockery or other articles requiring to be packed separately. (*Communicated by James McCree.*)	1786	23rd June 1870	William Spence.
Copying presses - - - - - (*Communicated by John Fensom.*)	1853	29th June 1870	William Spence.
Pumping or forcing apparatus for hydraulic presses and for compressing or exhausting elastic fluids.	1947	9th July 1870	Thomas Bruce.
Machines for moulding and pressing bricks - (*Communicated by Benjamin Magee Gard and Emery Ross Gard.*)	1962	12th July 1870	William Robert Lake.
Improved machinery for feeding sheets of paper to printing presses and other machines requiring to be similarly fed. (*Communicated by John Thomas Ashley.*)	2156	2nd Aug. 1870	Alfred Vincent Newton.
Apparatus for accumulating hydrostatic pressure -	2174	4th Aug. 1870	Louis Sterne. Peter Brotherhood.
Water-pressure machinery to be used in the manufacture of hats and other articles.	2261	15th Aug. 1870	Edward Colston Williams.
An improved fastener or "tie" for metallic bands employed in securing bales or packages of cotton or other matters packed under pressure. (*Communicated by Edward Pugh Jones.*)	2273	17th Aug. 1870	Edward Arthur O'Brien.
Printing presses - - - - - -	2324	24th Aug. 1870	William Braidwood.
Manufacture of thin lead pipes for use in irrigation purposes. (*in pipe drawing presses.*)	2332	25th Aug. 1870	Isaac Brown.
Improvements in the packing of bacon, hams and lard, and in the mode of preserving bacon and hams.	2346	26th Aug. 1870	John Morrell.
Apparatus for compressing hay or other substance and putting it up into bales.	2365	29th Aug. 1870	William Noble Lindsay.
Apparatus for pressing or extracting oil from seeds	2366	29th Aug. 1870	John Caboune Simonds. Robert Donnison.
Printing machinery - - - - -	2421	6th Sept. 1870	David Payne.
Improvements in the manufacture of "bunches" or "fillers" for cigars, and in the preparation of tobacco therefor. (*pressing into shape.*) (*Communicated by Adolph Pearl.*)	2492	15th Sept. 1870	William Edward Newton.
Stamping or embossing presses - -	2556	23rd Sept. 1870	Charles Frederick Carter.
Machinery and tools for pressing washers, bucket ears, box clips and similar articles out of sheet metal. - - - - - -	2563	24th Sept. 1870	George Price. George Arthur Price.
Fastenings for the ends of the metallic hoops or bands used in baling cotton and other substances.	2604	30th Sept. 1870	Francis Watkins.
A new or improved self-acting lithographic and type printing press.	2637	5th Oct. 1870	Charles Waddie.
Improvements in and relating to the packing of fibrous or loose materials in ships.	2712	14th Oct. 1870	William Bruce Thompson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRESERVING FOOD, &c.—*continued.*			
A new manufacture of concentrated and preserved potatoes and other vegetables.	2595	30th Sept. 1870	Heinrich Stapfer.
Improved apparatus for filling glass bottles and jars with soups, jellies, fruits and other edibles for the purpose of preserving them, the said apparatus being also applicable for filling bottles with sauces, wines and spirits, beer, liqueurs and other still and effervescing beverages, also machinery in combination with the above apparatus for corking or stoppering such said bottles and jars.	2635	4th Oct. 1870	James Winter, the younger.
Preparation of concentrated food - -	2728	17th Oct. 1870	George Batty.
The manufacture of a powder from beet, carrot, parsnip, mangold wurzel or other saccharine roots, to be used as a substitute for chicory for mixing with coffee or for separate uses as a beverage boiled or infused, and which he designates granule.	2758	20th Oct. 1870	John Howard.
Manufacture of machines for mincing and cutting animal and vegetable substances. - -	2807	25th Oct. 1870	Frederick William Fellows. John Bate.
Preservation of milk - - - -	2861	31st Oct. 1870	James Ashby Newnham.
A new or improved instrument for cutting off the ends of boiled eggs.	2870	1st Nov. 1870	William Hammant.
An improved mixture for preserving meat, fish, poultry, game, cheese and other animal substances.	3105	26th Nov. 1870	William Gostwyck Gard.
Pulping machinery specially for cooked cereals -	3181	3rd Dec. 1870	Newton Wilson. Charles Hengst.
Preservation of meat and other animal matters - (*Communicated by Eugene Pelouze.*)	3253	12th Dec. 1870	John Henry Johnson.
Apparatus for removing the skin or peel from potatoes and other roots, and for removing peas and other seeds from their shells or pods.	3306	17th Dec. 1870	James Lamb Hancock.
Method or process of preserving meat and fish -	3321	20th Dec. 1870	Louis Mariotti.
An improved mode of and composition for preserving fruit. (*Communicated by Samuel E. Sewall and Joseph G. Loring.*)	3378	27th Dec. 1870	George Haseltine.
PRESSES, COMPRESSING, PACKING AND ARRANGING.			
Wire ties for securing bales of cotton, hay or other material. (*Communicated by Edwin S. Lenox.*)	16	3rd Jan. 1870	William Robert Lake.
Apparatus for moulding and compressing substances for artificial fuel.	154	19th Jan. 1870	Thomas Patterson Balls.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRESSES, &c.—*continued.*			
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion. (*grab links applied to cramps for compressing.*)	175	20th Jan. 1870	James Maze Kilner.
An improved process for preserving bread in a reduced bulk. (*by compression.*) (*Communicated by Jean Joseph Auguste Mouriés.*)	184	21st Jan. 1870	William Edward Gedge.
Motive-power engines and steam generators to be used therewith, suitable for domestic purposes. (*driving presses.*) (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johnson.
Printing presses - - - - - - (*Communicated by Merritt Gally.*)	322	3rd Feb. 1870	Alexander Melville Clark.
Copying presses - - - - - -	373	9th Feb. 1870	Thomas Alfred Warrington.
Machinery or apparatus for pressing spent hops, grains, beetroot or other substances used in the processes of brewing and distilling to extract liquor or moisture therefrom. - -	389	10th Feb. 1870	Charles Pontifex. Frederick Pontifex. Anthony Sherwood.
Machinery for compressing artificial fuel -	516	22nd Feb. 1870	Felix John Hamel.
Machinery for twisting, compressing and rolling tobacco, applicable also to rolling, compressing and drawing metals. - - - - -	652	5th March 1870	Elijah Robinson. Charles Frederick Robinson. James Edward Hyde Andrew.
An improved method of etching relief-plates for surface printing. (*and embossing presses.*) (*Communicated by John McLoughlin and Edmund McLoughlin.*)	700	9th March 1870	William Robert Lake.
Making horse-shoes - - - - - (*by pressure.*)	780	16th March 1870	James Townsend Walker.
Improvements in maintaining, controlling, and registering the pressure in hydraulic presses and in apparatus connected therewith.	785	16th March 1870	Francis Virtue.
Lithographic, zincographic and other printing presses. (*Communicated by Charles Parker.*)	796	17th March 1870	Edward Thomas Hughes.
Improved modes, means and apparatus for and connected with the copying of letters and other documents. - - - - - -	830	21st March 1870	George Barker. James McFarlane.
Machinery or apparatus for compressing, forming and extracting moisture from peat, clay and other materials. (*Communicated by Thomas Ellis and William Alonzo Ellis.*)	896	26th March 1870	John Henry Johnson.
Improvements in bale-hoops and other bands, and in preparing, fitting and securing the ends thereof.	911	29th March 1870	William McNabb.
An improved endorsing or marking press or stamp	925	30th March 1870	John Tietjen.
Improvements in the production of artificial fuel and in apparatus to be employed for such purpose. (*constructing the presses.*) (*Communicated by the Anthracite Fuel Manufacturing Company (Incorporated).*)	928	30th March 1870	John Henry Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRESSES, &c.—*continued.*			
Mechanism for diminishing friction. - - (*in presses.*) (*Communicated by Jean Baptiste Léopold Favier-Lagaye and Ernest Auguste Verleye.*)	942	31st March 1870	William Robert Lake.
An improved pressing machine for the use of tailors and others. - - - -	970	2nd April 1870	Israel Summersfield. John Glasgow Sanderson.
Reduction of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials. (*by pressure.*)	1159	20th April 1870	George William Ley.
Improvements in roofing tiles, and in the method of locking or fastening them together when being formed into a roof, and in the ridging for tiled roofs, and in the apparatus used in the manufacture of such tiles, fastenings and ridges, and also of articles used for similar purposes and for bricks. - - - - - -	1173	22nd April 1870	Joseph Armytage Wade. John Cherry.
An improvement in wrappers for papering needles, and a new or improved instrument or apparatus for measuring or counting needles for papering.	1178	22nd April 1870	Victor Milward.
Mechanism for transmitting power and increasing the effectiveness of the same. - - - (*applied to presses.*)	1225	28th April 1870	Richard Bruno Hamel. James Brower Holden.
Buckles or bale ties - - - - (*Communicated by Eleazar Judson Beard.*)	1255	2nd May 1870	Alfred Vincent Newton.
An improved needle wrapper - - -	1322	9th May 1870	Thomas Banks.
Construction of pressing machines, applicable to pressing cheese and other articles.	1378	14th May 1870	Ralph Mellard.
Manufacture of bearings, slides and packings for steam-engines and other machinery. (*Communicated by Eliza Dexter Murfey.*)	1401	16th May 1870	John Henry Johnson.
An improved mode of and apparatus for preserving butter and other similar substances. (*packing.*) (*Communicated by Messieurs Guichard and Son.*)	1458	19th May 1870	John Henry Johnson.
Wire ties for securing bales of hay, cotton and other merchandize.	1464	20th May 1870	Daniel Cole Lowber.
An improved process and apparatus for preparing and finishing printed paper. - - -	1522	26th May 1870	John Appleton. Robert Craib Ross.
An improved thermo-press - - -	1558	27th May 1870	Ferdinand Tommasi.
Improvements in the manufacture of soles and heels for boots and shoes, and in apparatus employed in such manufacture. - - (*pressed leather, &c.*) (*Communicated by Laurent Hurtault.*)	1588	31st May 1870	William John Barron. Edmund Charles Barron.
Apparatus for compressing gunpowder and other substances into pellets.	1595	2nd June 1870	Jabez James.
Machinery for pressing bricks, tiles and other articles made of clay or other plastic substances.	1612	3rd June 1870	Charles Henry Murray.
Machinery for pressing cotton and other materials	1641	7th June 1870	Walter West. Daniel Kemp West.
Machinery for manufacturing wire ties for securing bales of hay, cotton and other merchandize.	1695	13th June 1870	Daniel Cole Lowber.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRESSES, &c.—*continued.*			
Machinery or apparatus for pressing and forming heels for boots and shoes, and for other like purposes. (*Communicated by Horace Holley Bigelow.*)	1709	15th June 1870	John Henry Johnson.
Construction of boxes or cases for containing eggs, glass, crockery or other articles requiring to be packed separately. (*Communicated by James McCree.*)	1786	23rd June 1870	William Spence.
Copying presses - - - - - (*Communicated by John Fensom.*)	1853	29th June 1870	William Spence.
Pumping or forcing apparatus for hydraulic presses and for compressing or exhausting elastic fluids.	1947	9th July 1870	Thomas Bruce.
Machines for moulding and pressing bricks - (*Communicated by Benjamin Magee Gard and Emery Ross Gard.*)	1962	12th July 1870	William Robert Lake.
Improved machinery for feeding sheets of paper to printing presses and other machines requiring to be similarly fed. (*Communicated by John Thomas Ashley.*)	2156	2nd Aug. 1870	Alfred Vincent Newton.
Apparatus for accumulating hydrostatic pressure -	2174	4th Aug. 1870	Louis Sterne. Peter Brotherhood.
Water-pressure machinery to be used in the manufacture of hats and other articles.	2261	15th Aug. 1870	Edward Colston Williams.
An improved fastener or "tie" for metallic bands employed in securing bales or packages of cotton or other matters packed under pressure. (*Communicated by Edward Pugh Jones.*)	2273	17th Aug. 1870	Edward Arthur O'Brien.
Printing presses - - - - -	2324	24th Aug. 1870	William Braidwood.
Manufacture of thin lead pipes for use in irrigation purposes. (*in pipe drawing presses.*)	2332	25th Aug. 1870	Isaac Brown.
Improvements in the packing of bacon, hams and lard, and in the mode of preserving bacon and hams.	2346	26th Aug. 1870	John Morrell.
Apparatus for compressing hay or other substance and putting it up into bales.	2365	29th Aug. 1870	William Noble Lindsay.
Apparatus for pressing or extracting oil from seeds	2366	29th Aug. 1870	John Caboune Simonds. Robert Donnison.
Printing machinery - - - -	2421	6th Sept. 1870	David Payne.
Improvements in the manufacture of "bunches" or "fillers" for cigars, and in the preparation of tobacco therefor. (*pressing into shape.*) (*Communicated by Adolph Pearl.*)	2492	15th Sept. 1870	William Edward Newton.
Stamping or embossing presses - -	2556	23rd Sept. 1870	Charles Frederick Carter.
Machinery and tools for pressing washers, bucket ears, box clips and similar articles out of sheet metal. - - - - -	2563	24th Sept. 1870	George Price. George Arthur Price.
Fastenings for the ends of the metallic hoops or bands used in baling cotton and other substances.	2604	30th Sept. 1870	Francis Watkins.
A new or improved self-acting lithographic and type printing press.	2637	5th Oct. 1870	Charles Waddie.
Improvements in and relating to the packing of fibrous or loose materials in ships.	2712	14th Oct. 1870	William Bruce Thompson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRESSES, &c.—*continued.*			
Improvements in the manufacture of sulphuric acid and in apparatus connected therewith. (*compressing spent oxide.*)	2823	27th Oct. 1870	Peter Spence.
Construction of bowls or rollers used in calendering and other pressing or squeezing machinery.	2827	27th Oct. 1870	Robert Brewitt.
Improvements in presses for relief stamping or printing, and in reservoir ink or colour rollers for regulating the flow of ink or colour therefrom.	2844	28th Oct. 1870	John Gough.
Apparatus for drying and heating, amalgamating, moulding and compressing, more especially applicable to the manufacture of preserved coal.	2941	8th Nov. 1870	Henry Walker Wood.
Apparatus for the manufacture of articles of pressed glass.	2960	10th Nov. 1870	Thomas George Webb.
An improved method of and apparatus for compressing metals in a liquid condition. (*Communicated by Constantine Michael Ocooneff.*)	3001	16th Nov. 1870	George Haseltine.
Method of charging oil seed presses and the apparatus and envelopes therein employed.	3074	24th Nov. 1870	William Lomas Joy.
Hydraulic presses for pressing cotton, jute and other fibrous substances. (*Communicated by James Masson and Samuel Hodgert.*)	3084	24th Nov. 1870	Saint John Vincent Day.
Wire bands or fasteners for bales or parcels - (*Communicated by Edwin Sewall Lenox.*)	3260	13th Dec. 1870	Thomas James Smith.
Improvements in machinery for cutting artificial and other leather, particularly applicable for utilising waste pieces. (*and pressing.*)	3299	17th Dec. 1870	Joseph Hall.
Improvements in the process of extracting oil from olives or olive-cakes and in machinery to be employed therefor. - - - -	3307	19th Dec. 1870	Giacomo Eduardo Marchisio. Hugh Bulkeley Price. John Eliot Hodgkin.
Manufacture of hollow vessels, and dished, sunken, or tubular shapes or forms in metal. - - (*rolling pressure.*)	3354	22nd Dec. 1870	William Thomas Watts. Daniel Joseph Fleetwood.
Construction of cheese-pressers - - -	3384	28th Dec. 1870	Henry Simpson.
PRINTING AND TRANSFERRING; TYPE AND OTHER SURFACES FOR PRINTING; COMPOSING AND DISTRIBUTING TYPE.			
Printing machinery - - - - -	170	19th Jan. 1870	David Servante, junior.
Improvements in india-rubber manufactures and in tools or machinery employed therein. - (*roller covers.*)	295	1st Feb. 1870	George Broadhurst. John Swindells. John Kershaw.
Printing presses - - - - - - (*Communicated by Merritt Gally.*)	322	3rd Feb. 1870	Alexander Melville Clark.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRINTING, &c.—*continued.*			
An improved method of producing surfaces by the aid of photography. (*plates for printing from.*)	346	7th Feb. 1870	Walter Bentley Woodbury.
Feed apparatus for printing machines - -	350	7th Feb. 1870	Samuel Bremner.
Improvements in the production of photographic pictures or designs on veneers and solid wood, and in the application thereof to cabinet work, furniture, fancy wood articles and other decorative purposes. - - - - -	383	9th Feb. 1870	Arthur Foley. Henry Foley.
Printing machines, more especially designed for printing cards. (*Communicated by William Henry Bush.*)	397	10th Feb. 1870	William Robert Lake.
Machines for printing and indenting dates on or into railway and other tickets, and for analogous purposes.	425	12th Feb. 1870	William Thomas Whiteman.
Machinery for lithographing and letter-press printing.	501	21st Feb. 1870	George Newsum.
Producing "photographic" effects by lithographic printing on woven fabrics.	513	22nd Feb. 1870	Robert Gardner.
Manufacture of copper tubes, and also of copper rollers for calico printing, embossing and similar uses. - - - - - - -	554	24th Feb. 1870	James Balleny Elkington. Charles Edwin Ryder.
Machinery or machines for type design and colour printing on paper and other materials, and creasing, scoring or bending, cutting and perforating the same simultaneously.	562	25th Feb. 1870	Edward Tomlinson.
Methods of manufactures and combinations therewith of processes for producing pictorial, ornamental and other designs and devices.	600	1st March 1870	Benjamin George George.
Dressing, stiffening or finishing and printing textile materials and fabrics and paper.	651	5th March 1870	James Strang.
An improved method of etching relief-plates for surface printing. (*Communicated by John McLoughlin and Edmund McLoughlin.*)	700	9th March 1870	William Robert Lake.
Certain new and useful improvements in machines for setting types. (*Communicated by John Ten Eyck Slingerland.*)	725	11th March 1870	Henri Adrien Bonneville.
Preparing and producing drawings or designs upon squares or ruled design paper for manufacturing and other purposes, and for protecting and preserving the same from injury. (*used in printing yarns for carpet weaving.*)	775	16th March 1870	George Holdsworth.
Certain improvements in elastic rolls or tubing for clothes wringers and various other purposes, as well as in machinery for manufacturing the same. (*printers' rolls.*)	786	16th March 1870	Joel Moulton.
Lithographic, zincographic and other printing presses. (*Communicated by Charles Parker.*)	796	17th March 1870	Edward Thomas Hughes.
Improvements in moulds used in streotyping, and in apparatus for producing the same. (*Communicated by Hippolyte Auguste Marinoni.*)	797	17th March 1870	Alexander Melville Clark.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRINTING, &c.—*continued.*			
Improvements in the manufacture of boxes and cases, and in the modes or means of ornamenting and rendering the same wet-resisting or damp-proof. (*transferring and fixing ornaments, letters and designs.*)	813	18th March 1870	William Austin.
Rotary printing machines - - - (*Communicated by Jesse Bailey Brown.*)	897	26th March 1870	Alexander Melville Clark.
An improved endorsing or marking press or stamp	925	30th March 1870	John Tietjen.
Improvements in photography by processes which combine printing, painting and transferring for the production of chromo-photographs.	941	31st March 1870	William M'Craw.
Improvements in printing, lithographing and zincographing, and in the production of imitation photographic and also coloured designs on textile fabrics and paper, and in the means or apparatus employed therefor.	954	1st April 1870	Walter Mac Lean.
An improvement in typographic, lithographic and zincographic printing machines. - -	1025	7th April 1870	Charles Henry Gardner. George Howard Carey.
Machinery for etching or engraving cylinders used in printing and embossing. - -	1033	8th April 1870	James Edmondson. William Edmondson. Frederick William Edmondson.
Ornamenting wood, leather and other materials for the manufacture of fancy boxes, furniture, panellings, and for other ornamental purposes. (*transferring prints, &c.*)	1058	11th April 1870	Archibald Brown.
Improved methods of forming patterns on the surface of kamptulicon or other similar substances used for floor coverings and mats.	1097	14th April 1870	George Spencer.
Producing engravings on glass, metals, wood and other substances.	1102	14th April 1870	Amédée Auguste Wilbaux
Manufacture of ornamental net or lace - - (*coloring the lace by the process of block printing.*)	1201	26th April 1870	Richard Birkin, junr.
Machinery for printing upon spools used for holding thread and like materials. (*Communicated by Ira Dimock.*)	1261	3rd May 1870	Peter Joel Livsey.
Machinery for etching or engraving rollers for calico printers.	1297	6th May 1870	Robert Leake.
An improved stamping apparatus, chiefly designed for impressing names, addresses, dates and numbers upon letters, envelopes and other papers. (*Communicated by Messrs. Towle and Harding.*)	1313	7th May 1870	William Robert Lake.
Apparatus for photographic printing - -	1333	10th May 1870	Benjamin Joseph Edwards
An improved ink or improved inks for printing and other purposes. (*Communicated by Lewis Francis.*)	1419	17th May 1870	Benjamin Lawrence.
Improvements in printing, and in the machinery or apparatus employed therefor.	1581	31st May 1870	Percy David Hedderwick.
Ornamenting the edges and margins of books and paper. (*printing with flexible surfaces.*)	1587	31st May 1870	John Leighton, senr.
Machinery for engraving or etching rollers for calico printers. - - - -	1605	3rd June 1870	Robert Leake. Henry Larkin.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRINTING, &c.—*continued.*			
Mode of producing certain colors on cotton, linen and other textile fabrics.	1775	22nd June 1870	Ludwig Hamel.
Means and apparatus for cutting type, and carving, moulding and ornamenting wood, metal, stone and other materials.	1776	22nd June 1870	William John Cunningham. Alphonso Dabb.
Production of colours from aniline in dyeing and printing.	1863	30th June 1870	Robert Pinkney.
Improvements in ornamenting paper, woven fabrics and other surfaces, and in apparatus employed therein.	1869	1st July 1870	Hubert Airy.
A new or improved apparatus for counting paper in sheets, and in the application thereof to printing machines.	1958	11th July 1870	Percy David Hedderwick.
Printing machines and apparatus connected therewith.	1993	14th July 1870	Henry Martyn Nicholls.
Machinery or apparatus for printing boulinikon, linoleum, kamptulicon, cork carpet, corium oil and other floorcloths, baizes, leather cloths, oiled and other papers, india-rubber goods, woollen, cotton, linen and other textile fabrics.	2029	19th July 1870	John Hull. George Hibbert.
Manufacture of carpets	2059	21st July 1870	Arthur Howard Wharton.
Inking apparatus for printing presses	2115	28th July 1870	Israel Ludlow Garrard Rice.
Improved machinery for feeding sheets of paper to printing presses and other machines requiring to be similarly fed. (*Communicated by John Thomas Ashley.*)	2156	2nd Aug. 1870	Alfred Vincent Newton.
An improved method of producing surfaces by the aid of photography.	2171	4th Aug. 1870	Walter Bentley Woodbury.
Improvements in obtaining proofs or impressions from printing surfaces produced by photography, and also in obtaining such printing surfaces.	2266	16th Aug. 1870	Frederick Richard Window.
An improved method of printing upon glass	2291	19th Aug. 1870	William George Webb.
Production of raised pattern blocks, applicable for surface printing and for other purposes.	2304	20th Aug. 1870	John Henry Banks.
Improvements in lithographic printing, and in machinery used for that purpose, parts of which invention are applicable to other printing machinery.	2306	20th Aug. 1870	Joseph Lewis.
Printing machines and "flying grippers" for removing or taking the printed sheets from the machine cylinder.	2311	22nd Aug. 1870	Walter Richard. John Richard. Walter Miller Richard.
Printing presses	2324	24th Aug. 1870	William Braidwood.
Certain improvements in machinery or apparatus to be employed for manufacturing paper bags. (*and printing.*)	2326	24th Aug. 1870	Thomas Bibby. James Bibby. John Baron. William Baron.
Printing machinery (*Communicated by Richard March Hoe.*)	2330	24th Aug. 1870	William Edward Newton.
Improvements in lithographic printing machines, and in apparatus for grinding or preparing the surface of the stones used for lithographic purpurposes. (*damping apparatus.*) (*Communicated by Richard March Hoe.*)	2368	29th Aug. 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRINTING, &c.—*continued.*			
An improved process for making railway and other tickets, trade-mark labels, commercial cards, or similar printed forms.	2375	30th Aug. 1870	William Thomas Guyatt.
Machinery or apparatus for printing yarns or warps for carpets or other fabrics.	2386	1st Sept. 1870	Archibald Turner.
Apparatus for dating or marking railway and other tickets, cards, invoices, bills of lading and documents.	2395	2nd Sept. 1870	John Lewthwaite.
An improved method of impressing, gilding and printing on the edges and covers of books.	2400	2nd Sept. 1870	Robert Leighton.
Printing machinery - - -	2421	6th Sept. 1870	David Payne.
Machinery for manufacturing type - - (*Communicated by William Wallace Dunn.*)	2427	7th Sept. 1870	George Haseltine.
Weighing machines, involving means for counting, registering, printing, adding and other operations connected with weighing scales.	2456	10th Sept. 1870	Henry Fairbanks.
Manufacture of casting blocks and printing blocks used for heliographic and other printing. -	2464	13th Sept. 1870	George Baldock. Thomas James Denne. August Heutschel.
Photo-mechanical printing - - -	2485	15th Sept. 1870	Ernest Edwards.
Improvements applicable to letter-press printing machines, and in the production of stereotypes to be used therewith.	2514	19th Sept. 1870	Edmund Squire Norcombe.
Manufacture of metal plates employed for flat printing and other analogous purposes.	2524	20th Sept. 1870	Michael Daintry Hollins.
An improved type casting, breaking, rubbing and setting machine.	2527	20th Sept. 1870	John Alfred Thomas Overend.
Printing type - - - - (*Communicated by John William Wright.*)	2562	24th Sept. 1870	George Tomlinson Bousfield.
An improved mode of and apparatus for supplying paper to printing presses.	2576	28th Sept. 1870	Olof Nilson.
Improved self-acting machinery for opening, smoothing, spreading and guiding calico, cloth and other fabrics for the use of bleachers, dyers, calico printers and others.	2610	1st Oct. 1870	William Birch.
An improved method of producing divers coloured letters, figures or other characters upon a card, ticket, label, placard, or other like article, or upon any suitable surfaces for advertising or similar purposes. (*ruling and printing.*)	2687	11th Oct. 1870	Charles John Letts.
Printing and dyeing textile fabrics and yarns -	2692	12th Oct. 1870	John Lightfoot.
Printing metallic surfaces and metallic articles -	2696	12th Oct. 1870	Charles Lowe. William Peddie Harper
Certain improvements in mechanism or apparatus to be employed for simultaneously printing and delivering checks or tickets consecutively numbered or otherwise to persons entering places of amusement, riding in public vehicles, or for other purposes where checks are required as a means of detecting fraud.	2726	15th Oct. 1870	Richard Alphæus Gooding.
Improved machinery for preparing and printing floorcloths.	2749	19th Oct. 1870	John Wright.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PRINTING—*continued.*			
Manufacture of oil and other products of petroleum (*thickeners for fixing colours.*) (*Communicated by Charles Toppan.*)	2762	20th Oct. 1870	William Robert Lake.
Improvements in the manufacture of terry or cut-pile fabrics, and in the application of such fabrics to the manufacture of slippers, shoes, bags and other shaped articles. (*printing patterns on terry.*)	2788	22nd Oct. 1870	Archibald Turner.
Hollow rolls or cylinders attached to spindles (*printing rolls.*)	2789	22nd Oct. 1870	Anthony Gapper Southby.
Improvements in presses for relief stamping or printing, and in reservoir ink or colour rollers for regulating the flow of ink or colour therefrom.	2844	28th Oct. 1870	John Gough.
An improved machine for cutting and printing lozenges and crackers. (*Communicated by Ernest Greenfield and Philipp Strauss.*)	2934	7th Nov. 1870	Alexander Melville Clark.
Advertising and apparatus connected therewith (*printing.*)	2944	8th Nov. 1870	Henry Cyrus Symons.
Preparation of surfaces adapted for painting photographic and other printing.	2948	9th Nov. 1870	William Vincent Wallace.
Improved machinery or apparatus for doubling, cutting off, separating and folding paper as delivered from rotary web printing machines. (*Partly communicated by George Lauder.*)	3031	19th Nov. 1870	George Duncan. William Ashley Wilson.
Preparation of printing surface in photo-mechanical printing.	3036	19th Nov. 1870	John Robert Sawyer.
Means or apparatus employed in machine printing	3102	26th Nov. 1870	Walter Richard. John Richard. Walter Miller Richard.
Type writing machines	3234	9th Dec. 1870	Gustavus Palmer Harding.
Preparing and applying slate to useful and ornamental purposes. (*cutting letters.*)	3275	14th Dec. 1870	William Boggett.
Improvements in engraved or ornamented blocks or plates, in the mode or method of producing the same, and in the apparatus or mechanism employed therein, which apparatus is also applicable to other useful purposes. (*for printing.*) (*Communicated by Claus Van Haagen.*)	3366	24th Dec. 1870	John Henry Johnson.
Certain improvements in the method of preparing and in the means of producing and printing musical notation, and the words, signs, marks and devices employed therewith.	3369	24th Dec. 1870	John Lacey Davies.

For engraving cylinders, *see* "ENGRAVING."
For telegraphic printing, *see* "TELEGRAPHS."
For printing colours, *see* "DYES."

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, DRIVING, WORKING; TRANSMITTING POWER AND MOTION; CONVERTING MOVEMENTS.			
I.—Propelling Ships; Locomotion on Water; Propellers, Paddle-wheels and Screws.			
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion.	175	20th Jan. 1870	James Maze Kilner.
Improvements in the construction of ships or vessels and in bolts and nuts for fastening the parts together; also in the construction and employment of apparatus to be applied to such ships or vessels to assist in steering and propelling them through intricate channels.	237	26th Jan. 1870	Charles Lungley.
Improvements in the mode of and apparatus for shipping and unshipping auxiliary screw propellers whilst in deep water.	243	27th Jan. 1870	George Leach.
An improved windmill which when divested of a portion of its regulating parts can also be used as a water-wheel or as a ship's propeller.	281	31st Jan. 1870	Charles Mahler.
Propellers - - - - - -	306	2nd Feb. 1870	Charles Kinzler. Adam Keppler.
Improved means or apparatus for controlling and guiding the movements of torpedo boats, rams and other similar vessels. (*placing propeller shafts in and out of gear.*) (*Communicated by John Archibald Ballard.*)	382	9th Feb. 1870	Thomas James Smith.
Submerged propellers - - -	444	15th Feb. 1870	Otto Ernest Pohl.
Arrangement and application of auxiliary screw propellers to sailing vessels.	486	18th Feb. 1870	Thomas Russell.
Machinery for propelling vessels on the water -	539	24th Feb. 1870	James Jones Aston.
An improved method of and apparatus for producing and utilizing a fall of water. (*for propelling ships.*) (*Communicated by Doctor Heiman Sanders Ezn.*)	557	25th Feb. 1870	William Robert Lake.
Improvements in propelling vessels and in apparatus for the same.	566	25th Feb. 1870	Philip Kearney Macgregor Skinner.
An improved paddle-wheel for propelling vessels in the water.	570	26th Feb. 1870	Adam Wingard.
An improved apparatus for producing rotary motion	615	2nd March 1870	Charles Ernest de Lorière.
Machinery for propelling vessels and aërial machines by reaction, parts of which are applicable to forcing fluids for other purposes.	623	3rd March 1870	Richard Boyman Boyman.
Propellers for ships or other navigable vessels -	641	4th March 1870	William Tyrer.
An improved propeller for steam navigation - - (*Communicated by Mr. Wilhelm Hacker.*)	807	18th March 1870	George White.
Apparatus for propelling vessels - -	880	25th March 1870	James Cross.
Propelling apparatus for ships and other vessels -	1019	7th April 1870	Martyn John Roberts.
Improved machinery applicable for inland navigation. (*propelling.*) (*Communicated by Murray Jackson.*)	1047	9th April 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Improvements in the construction of steam vessels and in the arrangement of wheels for propelling the same. (*Communicated by Ferdinand Kothe.*)	1052	9th April 1870	William Robert Lake.
Improvements in the construction of thrust blocks, plummer blocks and such like mechanism used in steam ships, the said improvements being applicable to all kinds of screw and lifting jacks, and for the bearings of cranes, mill shafts and such like machinery. (*for shafts of screw propellers.*)	1141	19th April 1870	William Brown.
Screw propellers - - - - -	1236	30th April 1870	William Sketchley.
Paddle wheels - - - - - (*Communicated by William F. Knowlton and Marshall McComb.*)	1345	11th May 1870	William Robert Lake.
Improvements in the construction of vessels and in the means of propelling the same. (*Communicated by Jean Lucien Arman.*)	1375	13th May 1870	William Edward Newton.
Screw propellers - - - - - (*Communicated by Cornelis Johannes Wilton Van Reede.*)	1488	23rd May 1870	Alexander Browne.
Means of propelling ships and vessels - -	1663	9th June 1870	William Long Wrey.
Rotary engines and pumps - - - (*for driving screw propellers.*)	1679	10th June 1870	Robert Thomas Yeadon Johnson.
Improvements in steam and other vessels, and in steam-engines, steam-boilers and propellers applicable thereto, parts of which improvements are adapted for other purposes. (*Communicated by James Montgomery.*)	1691	11th June 1870	Benjamin Joseph Barnard Mills.
Improved combinations of screw propellers and steering apparatus for navigable vessels.	1721	16th June 1870	William Ashley Clayton.
Eccentric paddle wheels of every description -	1846	29th June 1870	Eugéne Cailleux.
Machinery for propelling ships or vessels - -	1878	2nd July 1870	Osborne Reynolds.
Giving motion to ships and other floating bodies -	1941	8th July 1870	Alexander Cochrane.
Construction of screw propellers used in steam ships.	1991	14th July 1870	William Brown.
An improved wind engine or apparatus for obtaining and applying motive-power. - - (*for propelling yachts, &c.*)	2033	19th July 1870	Charles Horton Plowright. William Plowright.
A new propulsion engine to be used for propelling bodies through the water and through the air, and for breaks to railway locomotives and other engines.	2040	20th July 1870	William Murray Ross.
Propellers - - - - -	2088	25th July 1870	William Lamphier Anderson.
A new or improved application of atmospheric power to fixed locomotive and ascensional machines. (*Communicated by Alfred Francois Osselin.*)	2135	30th July 1870	William Edward Gedge.
Propelling vessels by utilising the current of rivers as a motive-power.	2139	1st Aug. 1870	Barthélemy Picard.
Navigation of vessels by means of revolving sails, actuating screws or paddles.	2140	1st Aug. 1870	Barthélemy Picard.
Improvements in propellers, pumps and blowers -	2416	6th Sept. 1870	William Walker.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Construction of paddle wheels for propelling ships, and other navigable vessels through water.	2453	10th Sept. 1870	George Hayes Carter.
Life-boats - - - - - - (*Communicated by Robert Humble.*)	2498	16th Sept. 1870	William Robert Lake.
An improved propeller for steam navigation - (*Communicated by Mr. Wilhelm Hacker.*)	2507	17th Sept. 1870	George White.
Construction of paddle wheels for propelling ships and other navigable vessels through water.	2605	30th Sept. 1870	William Brown.
Propulsion and guidance or steerage of velocipedes and boats.	2770	20th Oct. 1870	Isaac Farrell.
Screw propellers - - - - -	3358	23rd Dec. 1870	Henry Burgess Young.
II.—Propelling Carriages; Locomotion on Land.			
A new and improved vehicle to be propelled by manual power. (*Communicated by Jean Louis Charton-Joanot.*)	10	3rd Jan. 1870	William Edward Gedge.
Propelling carriages and other machinery -	32	4th Jan. 1870	Thomas Bannehr.
Improvements in omnibuses and in connecting the same with road steamers or traction-engines.	573	26th Feb. 1870	Robert William Thomson.
An improved apparatus for producing rotary motion	615	2nd March 1870	Charles Ernest de Loriére.
Improvements in the application of power for the propulsion of vehicles on common roads or railways and in apparatus connected therewith. (*Communicated by Henri Adolphe Corbin.*)	664	5th March 1870	Alexander Melville Clark.
Improvements in locomotion and in the means to be employed therein. (*using guide wheels as auxiliary propellers.*) (*Communicated by Nicolas Joly.*)	847	22nd March 1870	John Henry Johnson.
Brakes and starting apparatus for railway carriages (*Communicated by Edward Pugh Jones.*)	1073	12th April 1870	William Robert Lake.
Velocipedes - - - - - -	1862	30th June 1870	Henry Hodgkinson.
A new or improved application of atmospheric power to fixed locomotive and ascensional machines. (*Communicated by Alfred François Osselin.*)	2135	30th July 1870	William Edward Gedge.
Velocipedes - - - - - -	2155	2nd Aug. 1870	George Friedrich Greiner. Jacob Friedrich Hiller.
Improvements in carriages for running on circular railways and in the means or method of propelling the same.	2222	10th Aug. 1870	Abraham Waddington.
Improvements in the construction of wheels, applicable chiefly to velocipedes, and in the driving gear of such vehicles. - - -	2236	11th Aug. 1870	James Starley. William Hillman.
Improved arrangements for applying compressed air or other fluid to propel omnibuses or other vehicles on railways, tramways or common roads, and in part applicable otherwise. - -	2733	17th Oct. 1870	David Laidlaw. John Thomson.
Propulsion and guidance or steerage of velocipedes and bolts.	2770	20th Oct. 1870	Isaac Farrell.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Velocipede carriages and vehicles	3077	24th Nov. 1870	Sidney Johnson.
Apparatus to be used in moving or transporting heavy bodies. (*on trams in mines.*)	3110	26th Nov. 1870	Robert Anthony Hardcastle.
A new system of railway adapted for the traffic of crowded streets of cities or towns or other places, of carriages for such railway, and means for propelling and stopping the same, part of which is applicable to the ordinary railway system.	3386	28th Dec. 1870	William Robertson.
An improved crank-action applicable to velocipedes	3207	6th Dec. 1870	Josiah Turner.
XII.—Driving Machinery, Ploughs and Pumps; Feed-motions, Guides, Adjustments and Traversers; Transmitting Power and Motion; Cranks and Gearing.			
Machinery for rolling bars for the manufacture of shoes for horses and other hoofed animals. (*feeding the heated bars to the rolls.*)	30	4th Jan. 1870	Edward Cottam.
Propelling carriages and other machinery	32	4th Jan. 1870	Thomas Bannehr.
Certain improvements in sizing machines (*driving by positive motion.*)	37	5th Jan. 1870	William Scowcroft Lowe.
Sugar cane mills (*arrangement of gearing.*)	42	5th Jan. 1870	Louis Carl Wilhelm Schütte.
Sewing-machines (*feeding mechanism.*)	43	5th Jan. 1870	Hiram Plummer.
Machinery for winding yarn or thread on to bobbins, spools or other similar surfaces. (*adjusting, traversing, actuating.*)	48	6th Jan. 1870	William Weild.
Machinery for combing cotton, wool and other fibrous materials. (*giving motion to the nipper shaft.*)	65	8th Jan. 1870	George Little.
Machinery for preparing fibres for spinning (*driving the feed plate, comb, &c.*) (*Communicated by André Koechlin.*)	106	12th Jan. 1870	Alfred Vincent Newton.
Feed mechanism for sewing-machines	114	13th Jan. 1870	James Lusty.
Feed motion of sewing-machines	127	15th Jan. 1870	John Watson.
Improvements in machinery for breaking and softening flax and other fibrous materials, which improvements are also applicable to calendering rollers and other purposes where a combined reciprocating rotary motion can be employed.	128	15th Jan. 1870	Thomas Robert Hay Fisken.
Machinery for cutting splints for matches and other purposes.	138	17th Jan. 1870	George Baker.
Machinery or apparatus for ornamenting or embroidering fabrics.	140	17th Jan. 1870	Alfred Robert Gibbons, Anthony Umbach.
Machines for sizing yarn (*driving the roller.*) (*Communicated by William Lancaster.*)	145	18th Jan. 1870	Henry Bernoulli Barlow.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
A new lever for changing alternate rotary motion into continuous rotary motion and vice versâ. (*Communicated by Joseph Julien Chenal.*)	149	18th Jan. 1870	Henry Woodcroft Hammond.
Wool combing and drawing machinery - - (*giving a lateral traverse motion to stripping belts, aprons or sheets.*)	151	18th Jan. 1870	Thomas Whitehead.
Looms for weaving - - - - - (*operating the picker.*) (*Communicated by Isaac Edwin Newton.*)	159	19th Jan. 1870	Edward Thomas Hughes.
Printing machinery - - - - - (*operating the fingers or grippers.*)	170	19th Jan. 1870	David Servante, junior.
Chaff cutters - - - - (*putting in motion feed mechanism.*)	189	21st Jan. 1870	Frederick Charles Southwell.
Improvements in apparatus for and in the treatment of liquid fuel and in the application thereof to prime movers. (*actuating machinery.*)	194	22nd Jan. 1870	Johann Maximilian Plessner.
Self-acting mules - - - -	195	22nd Jan. 1870	James Macqueen.
An improved electro-motor for sewing machines - (*Communicated by Gustave Henry Dervieu.*)	207	22nd Jan. 1870	Alexander Melville Clark.
Mowing and reaping machines - - (*changeable speed gear wheels.*) (*Communicated by George Washington Newton Yost, Franklin William Andrews, Lyman Stewart and Henry Allerton Hutson.*)	213	22nd Jan. 1870	William Robert Lake.
Machinery or apparatus for cutting curved and irregular forms. - - - - -	247	27th Jan. 1870	Archibald Douglas Brown. James Wotherspoon Brown.
An improved machine to be used in currying leather. (*regulating the pressure by bearings sliding in guides.*) (*Communicated by Césaire Renard.*)	265	28th Jan. 1870	Alexander Melville Clark.
Apparatus for producing rotary motion - - (*also engaging or shipping gear.*) (*Communicated by Addison Goodyear Waterhouse.*)	279	31st Jan. 1870	William Robert Lake.
Machinery for breaking, heckling, streaking and cleaning hemp, cleaning flax, tow, washing wool, and heckling, cleaning or washing other fibrous materials. (*adjustments, imparting movements.*)	280	31st Jan. 1870	Edward Brasier.
Construction of sewing-machines - - - (*feed and driving mechanism.*) (*Communicated by the Grover and Baker Sewing Machine Company.*)	283	31st Jan. 1870	John Henry Johnson.
Improvements in carding engines, which improvements are applicable to other similar purposes. (*adjusting apparatus.*)	296	1st Feb. 1870	David Robertson.
Morticing machines - - - (*giving motion to the bar or slide.*)	300	1st Feb. 1870	Francis Robert Whitcombe Hedges.
An improved friction clutch - - - (*actuating pressure dogs.*) (*Communicated by Francis Ashbury Pratt and Samuel Coit.*)	319	3rd Feb. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Construction of knitting machines (*operating thread guide.*) (*Communicated by Henry Von Hartz and Julius Feiss.*)	326	4th Feb. 1870	Alfred Vincent Newton.
Improved machinery for cutting, dressing or working stone. (*regulating strength and direction of the blows.*) (*Communicated by Carl Friedrich Schlickeysen.*)	327	4th Feb. 1870	Henry Edward Newton.
Printing presses (*giving motion.*) (*Communicated by Merritt Gally.*)	322	3rd Feb. 1870	Alexander Melville Clark.
An improved device for imparting to toothed wheels and racks and to mechanism connected therewith a variable reciprocating motion.	332	5th Feb. 1870	George Edward Harding.
Feed apparatus for printing machines	350	7th Feb. 1870	Samuel Bremner.
Machinery for shearing and washing sheep or other animals. (*driving the cutters.*)	394	10th Feb. 1870	John Charles Wilson.
Looms for weaving (*Communicated by John A. Bassett and John Robinson Norfolk.*)	401	10th Feb. 1870	William Robert Lake.
Improvements in the manufacture of carpets and in the machinery employed therein.	402	10th Feb. 1870	Archibald Turner.
Looms for weaving	405	11th Feb. 1870	David Dalglish.
Construction of clearers, applicable to machinery used in the preparation of cotton and other fibrous materials. (*adjustments.*)	410	11th Feb. 1870	Eli Stott. Amos Ogden. William Cookson Stafford.
Machinery for filing	412	11th Feb. 1870	James Willis Dixon, jun. John Bates.
Sewing-machines to produce overcast and button-hole hems by means of one single needle.	413	11th Feb. 1870	Isidor Nasch. Charles Grimme.
Machines for polishing yarns or threads (*Communicated by Sixte Pierre Villain.*)	417	12th Feb. 1870	William Spence.
Machines for printing and indenting dates on or into railway and other tickets and for analogous purposes.	425	12th Feb. 1870	William Thomas Whiteman.
Certain improvements in looms for weaving	448	16th Feb. 1870	William Smith.
Apparatus for preparing and spinning flax, tow, wool and other similar fibrous substances.	455	16th Feb. 1870	Thomas Whitehead. Henry Walton Whitehead.
Reaping and mowing machines (*Communicated by Louis Alexis Coutelet.*)	461	17th Feb. 1870	Bristow Hunt.
Machinery or apparatus for dressing or working stone.	466	17th Feb. 1870	William Bass. Pinder Hackworth.
Embroidering machinery (*Partly communicated by Johann Ulrich Billwiller.*)	489	18th Feb. 1870	James Lee Norton.
Machinery for engine turning or engraving metallic or other surfaces. (*Communicated by Eugine Darier.*)	492	19th Feb. 1870	Ernest Hill.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Machinery for lithographing and letter-press printing. (*arrangements of cam-motion and stop bar.*)	501	21st Feb. 1870	George Newsum.
Improvements in dressing stone and in the machinery or apparatus employed therefor. (*spiral feeder for supplying sand.*)	518	22nd Feb. 1870	William Adams.
Machinery for making horse-shoe nails - - (*operating the hammers, feeding, &c.*) (*Communicated by Daniel Dodge.*)	533	23rd Feb. 1870	Alexander Melville Clark.
Machinery for manufacturing nails - - (*feeding the sheet.*) (*Communicated by Daniel Reed, Royal Moulton Bassett and Theodore Sheldon Bassett.*)	544	24th Feb. 1870	Edward Thomas Hughes.
Apparatus for lifting potatoes and other roots - (*giving reciprocating motions.*)	560	25th Feb. 1870	George Hey Harrison.
Machinery for manufacturing screws - - (*feeding headed blanks, governing chasing tool discharging.*) (*Communicated by Jared Augustus Ayres.*)	563	25th Feb. 1870	Alfred Vincent Newton.
Construction and arrangement of mechanism for actuating sewing and other machines worked by a treadle. (*Communicated by Charles Henry Willcox.*)	564	25th Feb. 1870	John Henry Johnson.
Apparatus for charging and discharging gas retorts and for other similar purposes. (*driving and traversing.*)	565	25th Feb. 1870	James John Holden.
Machinery for excavating coal, stone and other minerals and for compressing air - - (*driving, hauling and traversing.*)	571	26th Feb. 1870	Samuel Firth. Frederick Hurd.
Apparatus for feeding thrashing machines - -	575	26th Feb. 1870	Thomas Bell. Francis Roper.
Tape-dressing machines - - - - (*driving.*)	611	2nd March 1870	William Scowcroft Lowe.
Hydraulic cranes or apparatus for raising, hauling and lowering weights. - - - (*obtaining variable powers.*)	614	2nd March 1870	Bryan Johnson. Edward Bayzand Ellington.
An improved apparatus for producing rotary motion (*operating cranes, presses, sewing machines, &c.*)	615	2nd March 1870	Charles Ernest de Lorière
A new or improved motive-power engine - - (*actuating machinery.*)	629	3rd March 1870	John Stuart Johnstone.
Machinery for spinning and doubling - - (*driving the flyers.*)	680	8th March 1870	Samuel Brooks. George Harrison. John Wardle.
Apparatus for boring - - - (*Communicated by Floran Ferdinnand Villepigue.*)	681	8th March 1870	Auguste Villepigue.
Improvements in the manufacture of hollow cast-iron cooking utensils and in the means or apparatus employed therefor or connected therewith, part of which apparatus is applicable to the moulding other articles. (*driving, grinding and punching machines, &c.*)	696	9th March 1870	John Neilson.
Improvements in threshing machines and in driving mechanism for the same, and for other machinery. (*Communicated by George B. Hamlin.*)	701	9th March 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Direct-acting power hammers and machinery for crushing and pulverising. - - - - (*regulating the lifting power.*)	715	10th March 1870	Samuel Chatwood. John Sturgeon.
Certain new and useful improvements in machines for setting types. (*guiding, imparting motion, &c.*) (*Communicated by John Ten Eyck Slingerland.*)	725	11th March 1870	Henri Adrien Bonneville.
Windlasses and capstans - - - - - (*transmitting motion from capstans, windlass.*)	737	12th March 1870	George Tyzack.
Machinery for holeing, cutting or excavating coal or other minerals. - - - - (*giving motion to a horizontal cutter.*)	751	15th March 1870	Robert Winstanley, the younger. William Barker.
Looms for weaving - - - - - (*actuating rotating shuttle boxes.*)	761	15th March 1870	John Carter Ramsden.
Sizing machines - - - - - - (*driving rollers and pulleys.*)	764	15th March 1870	Edward Dugdale. Joseph Dugdale.
Mules for spinning and doubling - - - - (*driving the spindles at different speeds.*)	771	16th March 1870	Robert Lakin. William Henry Rhodes. John Wain. William Greasley.
Certain improvements in elastic rolls or tubing for clothes wringers and various other purposes, as well as in machinery for manufacturing the same. (*feeding the elastic material.*)	786	16th March 1870	Joel Moulton.
Improvements in or applicable to sewing machines (*wheel feed.*)	789	17th March 1870	Thomas Williams.
Lithographic, zincographic and other printing presses. (*adjusting.*) (*Communicated by Charles Parker.*)	796	17th March 1870	Edward Thomas Hughes.
Improvements in the construction of two-furrow ploughs, and in other tilling implements. - (*raising and lowering.*)	798	17th March 1870	James Davis. William Nash Davies.
Machinery or apparatus for cutting or dressing stone. (*traversing, guiding, varying motion.*)	803	18th March 1870	Robert Girdwood.
Crimping machines - - - - - (*communicating motion, guides, &c.*) (*Communicated by Samuel W. Jamison.*)	806	18th March 1870	John Henry Johnson.
Apparatus for running or pouring metals, and for moulding and forming the same. (*regulating speed of plunger and moulds.*)	809	18th March 1870	James Murdoch Napier.
Improved means and apparatus for guiding ploughs, and also for regulating the depth of working of the same.	811	18th March 1870	William Woofe.
Machinery or apparatus for the manufacture of ropes, cords and wire ropes. (*fixed guides on the top and centre plates.*)	814	18th March 1870	William Guest.
Machinery for sewing boots and shoes - - (*feeding, gauging, &c.*) (*Communicated by Charles Goodyear, junior.*)	821	19th March 1870	William Robert Lake.
New or improved motors or motive-power mechanism or machines for obtaining and transmitting motive power.	832	21st March 1870	John Millar.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Improved means and apparatus for regulating the driving of millstones. (*Communicated by William Charlton Harrison.*)	891	26th March 1870	Thomas James Smith.
Machinery for doubling and winding cotton and other yarns and threads. (*regulating traverse guides, &c.*)	899	28th March 1870	Robert Smith.
Improvements in or applicable to machinery for spinning and twisting fibrous substances. (*mounting rollers for driving the bobbins, &c.*)	900	28th March 1870	James Sampson. Richard Rowlands Minton.
Improvements in the production of artificial fuel and in apparatus to be employed for such purpose. (*construction of cam cranks.*) (*Communicated by the Anthracite Fuel Manufacturing Company (Incorporated).*)	928	30th March 1870	John Henry Johnson.
Machines for reaping and mowing (*raising and lowering frames, grain wheel, &c.*) (*Communicated by Cyrus Hall McCormick.*	932	30th March 1870	Thomas James Smith.
Improvements in machinery for turning, shaping, cutting and boring wood and other substances, and in machinery for preparing cutters or tools for turning. (*adjusting the spindles.*)	933	31st March 1870	Jonathan Sellers.
Mechanism for diminishing friction (*in transmitting motion.*) (*Communicated by Jean Baptiste Léopold Favier-Lagaye and Ernest Auguste Verleye.*)	942	31st March 1870	William Robert Lake.
An improvement in sewing machines (*feed motion.*) (*Communicated by Nathaniel Wheeler.*)	960	1st April 1870	Alfred Vincent Newton.
Improvements in velocipedes, parts of which improvements are applicable to machinery generally. (*obtaining rotary from reciprocating motion.*)	979	2nd April 1870	Alfred Milnes Hobson. Edward Cozens Smith.
Horse hoes (*raising, lowering and regulating.*)	981	4th April 1870	George Deadman.
Looms for weaving (*adjusting flanges or warp beam.*)	992	5th April 1870	Thomas Smith.
Machinery for etching or engraving cylinders used in printing and embossing. (*imparting movements.*)	1033	8th April 1870	James Edmondson. William Edmondson. Frederick William Edmondson.
Machinery used in the manufacture of tacks and other similar nails. (*feeding apparatus.*)	1036	8th April 1870	George Baker.
Mills for grinding and pulverizing mineral or other substances. (*adjusting position of upper rotating stone.*)	1043	8th April 1870	Allan Craig.
Looms (*imparting movements, raising and lowering shuttle boxes.*) (*Communicated by George Crompton.*)	1048	9th April 1870	Alexander Horace Brandon.
Vertical saw frames (*chain feed, disc feed wheel, &c.*)	1066	12th April 1870	William Blackett Haigh
Ploughs (*lifting or depressing the land wheel.*)	1071	12th April 1870	James Howard.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
An improved method of and apparatus for applying power to the running of machinery and tools, whereby such machinery or tools may be adjusted to any desired angle in use.	1075	12th April 1870	William Spencer Coon.
Machinery for cleaning, preparing and spinning cotton and other fibrous substances. (*driving feed rollers, &c.*)	1078	13th April 1870	Edward Lord.
An improved machine for drilling or boring rocks, chiefly designed for working mines, tunnels and quarries, and for submarine operations. (*advance or feed motion giving reciprocating circular motion, &c.*) (*Communicated by James Asbury McKean.*)	1104	14th April 1870	William Robert Lake.
Machinery for spinning, twisting, doubling and throwing silk and other fibrous substances. (*actuating the winding-on motion.*)	1112	16th April 1870	Thomas Dickins.
Machinery or apparatus for raising and lowering heavy bodies. (*traversing winding drums laterally.*)	1115	16th April 1870	John Craven.
Apparatus for dressing and furrowing millstones - (*governing the course of the tool.*)	1120	16th April 1870	James Lee Norton.
Means or apparatus for feeding machinery employed in carding or preparing wool and other fibrous substances.	1148	20th April 1870	Edward Barnard Sampson.
Certain improvements in looms for weaving - (*guiding and actuating the wires.*)	1150	20th April 1870	William Smith.
Mowing and reaping machines - - (*lifting the inner shoe.*) (*Communicated by Rudolf Eickemeyer.*)	1170	22nd April 1870	George Tomlinson Bousfield.
Improvements in or applicable to machines for spinning and doubling fibrous materials. (*driving the bobbins.*)	1182	23rd April 1870	George Bernhardt.
Stone-cutting apparatus - - -	1202	26th April 1870	Sir William Fothergill Cooke. George Hunter.
Mechanism for transmitting power and increasing the effectiveness of the same. - - -	1225	28th April 1870	Richard Bruno Hamel. James Brower Holden.
Apparatus for starting treadle motions, applicable to sewing machines and other purposes. (*Communicated by Orwell Harrison Needham and Charles Newell Brainerd.*)	1226	28th April 1870	Alfred Vincent Newton.
Machinery or apparatus for preparing and combing wool or other fibrous substances. (*traversing.*)	1228	29th April 1870	Mordecai Jefferson.
Apparatus for supporting and guiding the work in machines for sewing boots and shoes.	1237	30th April 1870	Daniel Mills.
Sewing-machines - - - -	1243	30th April 1870	William Henry Gosling.
An improved arrangement of gearing for rolling mills.	1256	2nd May 1870	William Anderson.
An improved hoisting machine - - (*Communicated by Henry Reedy.*)	1257	2nd May 1870	James Jennings McComb.
Machinery for printing upon spools used for holding thread and like materials. (*Communicated by Ira Dimock.*)	1261	3rd May 1870	Peter Joel Livsey.
An improvement in harvesting machines -	1282	4th May 1870	Francis Mollett Blyth.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Machinery for etching or engraving rollers for calico printers.	1297	6th May 1870	Robert Leake.
Sizing machines - - - - - (*adjustments.*)	1310	7th May 1870	John Bullough.
Machinery or apparatus for spinning, twisting and roving worsted or other fibrous substances. (*driving and traversing bobbins.*)	1319	9th May 1870	John Speight.
Machinery for knitting looped fabrics - - (*actuating the needles.*)	1324	9th May 1870	John Pepper.
Improved machinery for pointing and finishing nails. (*adapting to hammers an adjustable pointing piece.*) (*Communicated by Sebastien Schlesinger.*)	1351	11th May 1870	William Edward Newton.
Apparatus for ploughing or cultivating land - (*raising and lowering.*)	1387	13th May 1870	Thomas Perkins.
Apparatus to be used in dyeing yarns - - (*moving the yarn hanks.*)	1388	14th May 1870	Andrew Fisher, junior.
Sawing machinery - - - - - (*driving.*)	1398	16th May 1870	Thomas Fawcett.
Steam pumping or blowing engines - - (*obtaining reciprocating motion.*) (*Communicated by James Riley Maxwell and Ezra Cope.*)	1413	17th May 1870	Martin Benson.
Improvements in apparatus for moulding and stamping soap and for other similar purposes, part of such improvements being also applicable to charging and discharging apparatus used in various other manufacturing operations.	1418	18th May 1870	Frederick John Cleaver.
Improvements in looms for weaving and in shuttles for the same and for other machines. (*giving motion to the pattern rollers.*) (*Communicated by Hamilton E. Towle.*)	1431	18th May 1870	William Robert Lake.
Looms for weaving - - - - - (*driving the lay in broad looms.*)	1458	19th May 1870	William Lawrence Mitchell.
Machinery and arrangements for cutting or getting minerals. (*reciprocating tool.*)	1471	21st May 1870	George Simpson.
Apparatus for feeding wool, cotton or other fibrous materials to carding or other machines. -	1484	23rd May 1870	Philip Charles Evans. Henry James Hogg King.
Machinery for scouring, glossing and otherwise treating leather. (*Communicated by Edward Fitzhenry.*)	1490	23rd May 1870	William Robert Lake.
Certain improvements in shafting and in transmitting power.	1496	24th May 1870	Evan Arthur Leigh.
Machinery or apparatus for making metal cop tubes. (*feed mechanism.*) (*Communicated by James Eaton.*)	1503	24th May 1870	John Henry Johnson.
Supporting apparatus for the rollers of spinning frames. (*or guide frame.*) (*Communicated by Florentin Augustin Steverlynck-Delecroix, Edmond Steverlynck and Leon Steverlynck.*)	1506	24th May 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Machinery or apparatus for washing and drying wool, yarn and other fibrous materials. (*actuating the rakes.*)	1511	25th May 1870	John McNaught. William McNaught.
Machinery for cutting wood screws and slot bolts (*feed apparatus.*) (*Communicated by Louis André de Coster, Joseph Michel Melany and Edward Casper.*)	1519	25th May 1870	Alexander Melville Clark.
An electro-magnetic motor for sewing and other machines. (*and feed apparatus.*)	1555	27th May 1870	George Stevens. Joshua Hendy.
Improvements in producing rotary motion applicable to egg beaters, churns, bottle washers, washing-machines, drills, tools and other instruments. (*Communicated by M. W. Robinson.*)	1557	27th May 1870	William James Schlesinger.
Looms for weaving (*gearing, differential motions, &c.*) (*Communicated by James Lyall.*)	1578	30th May 1870	Alfred Vincent Newton.
Improvements in sewing machines and in machinery or apparatus for winding the thread on to the spools or bobbins. (*feed motion driving the shuttle.*)	1592	1st June 1870	William Winter.
An improved machine for making cut-nails (*communicating vibrating motion to the pincer bar.*)	1597	2nd June 1870	Henry Scheuerle. Daniel Gugisperg. Carl Scheib.
Carding and spinning machines (*driving the flyer and bobbin.*) (*Communicated by John Goulding.*)	1601	2nd June 1870	Alexander Horace Brandon.
Machinery for engraving or etching rollers for calico printers.	1605	3rd June 1870	Robert Leake. Henry Larkin.
Lace machines (*driving the catch bars.*)	1643	7th June 1870	Edwin Doughty.
Machinery for cultivating land by steam or other power. (*driving, winding and coiling apparatus.*)	1667	9th June 1870	William Fisken. Thomas Robert Hay Fisken.
Rotary engines and pumps	1679	10th June 1870	Robert Thomas Yeadon Johnson.
Sewing-machines	1685	11th June 1870	Thomas Greenwood. John Keats.
Machinery for winding cops for weft, warp or other purposes. (*driving two rows of spindles.*)	1688	11th June 1870	John Combe.
Machinery or apparatus for pressing and forming heels for boots and shoes and for other like purposes. (*rotating the cylinder.*) (*Communicated by Horace Holley Bigelow.*)	1709	15th June 1870	John Henry Johnson.
Improvements applicable to reaping and mowing machines. (*working the knives by steam.*)	1760	21st June 1870	Charles James Fox. Robert Larchin. John Dodd.
An internal spring coupling and brake for transmitting, stopping or regulating motion.	1777	22nd June 1870	Léandre Mégy. Joseph de Echeverria. Felix Bazan.
Improved strapping motion in mules for spinning	1838	28th June 1870	Aaron Metcalf. William Gibbons.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Ploughs - - - - - - (*adjusting.*)	1841	28th June 1870	Thomas Corbett.
Means of producing and regulating motive power -	1859	30th June 1870	John Bourne.
Improvements in ornamenting paper, woven fabrics, and other surfaces, and in apparatus employed therein.	1869	1st July 1870	Hubert Airy.
Apparatus employed in drawing, roving, doubling, spinning and twisting wool and other fibres. -	1887	4th July 1870	Thomas Broughton. Wilson Riley.
Looms for weaving - - - - -	1921	7th July 1870	Isaac Whitesmith.
Apparatus for cleaning the fluted and top rollers of machines used in preparing and spinning cotton and other fibrous substances. - -	1922	7th July 1870	Benjamin Dobson. Thomas Thornley. John Settle.
Machinery for punching metal - -	1928	7th July 1870	Charles de Bergue.
Machines for moulding and pressing bricks - (*Communicated by Benjamin Magee Gard and Emery Ross Gard.*)	1962	12th July 1870	William Robert Lake.
Improvements in carpets and in machinery or apparatus for manufacturing the same. (*Communicated by William Wallace and Charles McAllister.*)	1981	13th July 1870	John Henry Johnson.
Machinery or apparatus for reducing wood, metal or other hard material to fixed patterns. (*Communicated by Frederick Baldwin.*)	1987	14th July 1870	Giovanni Sconcia.
Printing machines and apparatus connected therewith	1993	14th July 1870	Henry Martyn Nicholls.
Brick-making machinery - - - (*giving the cylinders intermittent motion.*)	2002	15th July 1870	Richard Scholefield.
Improvements in repairing worn or damaged rails of permanent way and in the combination and arrangement of machinery or apparatus employed therein. (*driving side rolls saw gauge.*)	2009	15th July 1870	Hugh Baines.
An improved positive differential motion -	2069	22nd July 1870	Henry Howard. Thomas Taylorson.
Inking apparatus for printing presses - -	2115	28th July 1870	Israel Ludlow Garrard Rice.
An improved device for guiding covered wire to be secured upon a fabric or substance in a sewing machine. (*Communicated by William T. Cook.*)	2124	29th July 1870	Thomas Andrew Vyse, junior.
Machinery for sewing boots and shoes - - (*Communicated by Charles Goodyear, junior.*)	2173	4th Aug. 1870	William Robert Lake.
Apparatus for separating, cleaning, classifying coal, ore, grain and other solid substances.	2187	6th Aug. 1870	George William Hick.
An improved sewing machine - - (*Communicated by John Paulding.*)	2166	3rd Aug. 1870	William Robert Lake.
Improved apparatus for steam cultivation -	2193	6th Aug. 1870	Robert Edwards.
Certain improvements in machinery for preparing cotton and other fibrous substances. - - (*guides.*)	2230	11th Aug. 1870	Samuel Brooks. John Standish.
Knitting machines - - - - (*guides, &c.*) (*Communicated by John Lee, Mark Lee and William Carter.*)	2250	12th Aug. 1870	Alexander Melville Clark.
Certain improvements in machinery for ginning cotton. (*giving motion to the knife.*)	2262	15th Aug. 1870	David Ellis.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Machinery for cutting grass or corn - -	2295	19th Aug. 1870	James Howard. Edward Tenney Bousfield.
Certain improvements in sewing machines - (*adjustable hem folder.*)	2301	20th Aug. 1870	Arthur Isaac Maxfield.
Printing machines and "flying grippers" for removing or taking the printed sheets from the machine cylinder. - - - - - (*driving the tables.*)	2311	22nd Aug. 1870	Walter Richard. John Richard. Walter Miller Richard.
Knitting machines - - - - - (*thread guide.*) (*Communicated by William Henry Abel.*)	2323	23rd Aug. 1870	William Robert Lake.
Printing presses - - - - - - (*giving motion to roller carriage.*)	2324	24th Aug. 1870	William Braidwood.
Certain improvements in machinery or apparatus to be employed for manufacturing paper bags. - (*feed motions, guide bars, &c.*)	2326	24th Aug. 1870	Thomas Bibby. James Bibby. John Baron. William Baron.
Improvements in reaping and mowing machines, parts of which improvements are also applicable to other purposes. - - - - - (*moving the cutter bars.*)	2329	24th Aug. 1870	William Goulding. Austin Hill.
Printing machinery - - - - (*feed guides, wheel and rack motion, &c.*) (*Communicated by Richard March Hoe.*)	2330	24th Aug. 1870	William Edward Newton.
Apparatus for feeding wool, cotton or other fibrous materials to carding or other machines.	2335	25th Aug. 1870	Henry James Hogg King.
Machinery or apparatus for tunnelling or forming galleries in mines, quarries and other places.	2349	26th Aug. 1870	Thomas Frederick Henley.
Machine for manufacturing paper bags - - (*finger guide.*) (*Communicated by Margarete E. Knight.*)	2364	29th Aug. 1870	William Robert Lake.
Apparatus to be applied for operating sewing and other machines. (*Communicated by Edward Jenner Leyburn.*)	2381	31st Aug. 1870	Alexander Melville Clark.
Machinery for cutting coal and other minerals -	2387	1st Sept. 1870	Wordsworth Donisthorpe. William Leatham. George Edmund Donisthorpe.
An improved tucking gauge and marker, applicable for use on sewing machines generally.	2403	3rd Sept. 1870	Thomas Rogers.
Flexible shafting and apparatus connected therewith for transmitting power. (*Communicated by James Beall Morrison.*)	2409	3rd Sept. 1870	George Haseltine.
Machinery or apparatus for forming, hardening, tempering, straightening and cutting paragon or other wires to be used for ribs and stretchers of umbrellas or other useful purposes. - -	2420	6th Sept. 1870	Charles Bottom. Joseph Hallam. Samuel Westley Hallam.
Machinery for manufacturing type - - (*Communicated by William Wallace Dunn.*)	2427	7th Sept. 1870	George Haseltine.
Floating dredges or machinery for loosening, raising, transporting and depositing sand, gravel and mud. (*Communicated by James Burt.*)	2438	9th Sept. 1870	Thomas Burt.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Improvements in or applicable to machinery or apparatus for carding wool or other fibrous substances.	2441	9th Sept. 1870	Thomas Howard Blamires.
Weighing machines involving means for counting, registering, printing, adding and other operations connected with weighing scales.	2456	10th Sept. 1870	Henry Fairbanks.
An improved machine for cutting mill boards, card and similar materials to a required breadth and length. (*adjustments, feed arrangement, &c.*)	2502	16th Sept. 1870	Henry James Williams.
An improved apparatus for forming wire into spiral coils. (*feed and adjustments.*)	2508	17th Sept. 1870	Hamilton E. Towle.
Rolling mills - - - - - (*adjusting device guides.*) (*Communicated by David Isaac Jones.*)	2537	21st Sept. 1870	Alexander Melville Clark.
Machinery for drawing, spinning and twisting flax, tow, wool, worsted, silk, cotton, china grass or other fibrous substances. - - - (*drag motion.*)	2548	23rd Sept. 1870	William Bywater. Jack Shaw.
Improvements in centrifugal machines, in the suspension and driving of the same, and a new or improved combination thereof with other apparatus. (*driving.*)	2550	23rd Sept. 1870	David McColley Weston.
Agricultural drills - - - - (*seed feed; raising and lowering coulter stalks.*)	2555	7th Oct. 1870	Samuel Randall. John Randall.
Machinery and tools for pressing washers, bucket ears, box clips and similar articles out of sheet metal. - - - - - (*oblique motion of rams self-feed motion.*)	2563	24th Sept. 1870	George Price. George Arthur Price.
Chaff-cutting machines - - - (*feed motion.*)	2564	24th Sept. 1870	Joseph Apsey.
Sewing machines - - - - - ("*grate feed,*" *&c.*)	2565	26th Sept. 1870	Henry Lomax. Joseph Lomax.
An improved machine for cutting paper hangings (*feeding or guiding.*)	2566	26th Sept. 1870	David Pirie. Alexander Croom.
Machinery for twisting and laying cords and rope - (*revolving the spool frames.*) (*Communicated by Howard Perkins.*)	2572	27th Sept. 1870	John Russell Taber.
An improved mode of and apparatus for supplying paper to printing presses.	2576	28th Sept. 1870	Olof Nilson.
Improvements in machinery for cutting wood, and partly applicable to hand braces. - - (*feed motions.*)	2584	29th Sept. 1870	John Hill. Alexander Morton Strathern.
Sewing machines - - - - - (*guides and adjustments.*)	2592	29th Sept. 1870	Carl Necker.
Sewing machines - - - - (*feed motions.*)	2593	30th Sept. 1870	Daniel Hanna.
Spinning machinery - - - - (*feed organ.*) (*Communicated by William Sparks Thomson.*)	2603	30th Sept. 1870	Alexander Horace Brandon.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Improved self-acting machinery for opening, smoothing, spreading and guiding calico, cloth and other fabrics, for the use of bleachers, dyers, calico printers and others. (*regulator or guide.*)	2610	1st Oct. 1870	William Birch.
A new or improved self-acting lithographic and type printing press. (*feed motion, &c.*)	2637	5th Oct. 1870	Charles Waddie.
Improvements in or applicable to machinery or apparatus for cutting wood to any required pattern or design. (*working movements.*)	2671	8th Oct. 1870	William Ellis.
Improvements in combing and preparing cotton, wool and other fibrous substances, and in engines or machines in connection therewith. (*feeding boxes.*) (*Communicated by Edouard Tavernier.*)	2691	12th Oct. 1870	Louis Ferdinand Tavernier
Sewing machines - - - - (*thread holder or guide.*)	2694	12th Oct. 1870	James Henry Smith.
Reaping and mowing machines - - - (*producing varying speed.*)	2734	17th Oct. 1870	Adam Carlisle Bamlett.
Guiding the material for the construction of button-holes on button-hole sewing machines.	2738	18th Oct. 1870	Simon Collins.
Sewing machines - - - - (*feed movements, &c.*)	2740	18th Oct. 1870	Joseph Buchanan Robertson.
Machinery for the manufacture of toilet or dress pins and other pins. - - - - (*feed mechanism.*)	2756	20th Oct. 1870	William Twining. Joseph Dangerfield.
Machinery for making wrought iron railway sleepers, and applicable for shaping metals for other purposes. - - - - - (*feed mechanism.*)	2763	20th Oct. 1870	Matthew Andrew Muir. James McIlwham.
Apparatus for winding thread on to bobbins - (*thread guide and presser.*)	2764	20th Oct. 1870	William Clark.
Machinery or apparatus for washing, opening and drying wool and other fibrous materials and washing yarns. - - - - (*actuating the rakes, &c.*)	2772	21st Oct. 1870	John McNaught. William McNaught, jun.
An improved arrangement of feed regulator for sewing machines.	2781	21st Oct. 1870	William Bown.
Improved apparatus for singeing fabrics - - (*traverse motions.*)	2787	22nd Oct. 1870	James Worrall.
Slide rests for producing geometrical figures and designs. (*effecting automatic movements.*)	2830	27th Oct. 1870	Richard Pudsey Dawson.
Improvements in mechanism for giving a slow rotatory motion to the bottoms of ovens, to frames or supports for exhibiting articles in shop windows and for other like purposes, and in frames or supports to be actuated by the said mechanism.	2835	27th Oct. 1870	Alfred Bennett.
Ploughs - - - - - (*raising out of the land.*)	2847	29th Oct. 1870	Richard Hornsby. James Edwin Phillips.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Apparatus for cooling and refrigerating liquids, manufacturnig ice and obtaining ammoniacal solution for the same and other purposes. (*driving pumps by ammoniacal gas.*)	2891	2nd Nov. 1870	Rees Reece.
Ploughs - - - -	2898	3rd Nov. 1870	James Howard. Thomas Phillips.
Improved machinery for pointing nails - - (*feeding operating gauge, &c.*) (*Communicated by Lawrence Barnes.*)	2899	3rd Nov. 1870	William Edward Newton.
Cutting, boring grinding and pulverizing stone and other hard substances. (*by means of a stream of sand.*) (*Communicated by Benjamin Chew Tilghman.*)	2900	3rd Nov. 1870	Alfred Vincent Newton.
Machinery for preparing wool for combing - - (*series of guides.*)	2912	4th Nov. 1870	James Emmott.
An improvement applicable to treadles used in working sewing and other machines. (*Communicated by Charles Gordon Patterson.*)	2936	7th Nov. 1870	Alfred Vincent Newton.
Machinery for manufacturing carpet lining - - (*Communicated by Joel Fisher Fales.*)	2939	8th Nov. 1870	Alexander Melville Clark.
Advertising and apparatus connected therewith -	2944	8th Nov. 1870	Henry Cyrus Symons.
Apparatus for producing motive-power - - (*transmitting motion.*)	2993	15th Nov. 1870	Thomas Hitchcock.
Apparatus for raising and lowering weights and for reducing speed. (*transmitting power to shafts.*)	3009	17th Nov. 1870	Jonathan Pickering.
Sewing machines - - - - (*driving.*)	3011	17th Nov. 1870	William Taylor.
Machinery for cutting or shaping wood - - (*driving, feeding, &c.*)	3029	18th Nov. 1870	Allen Ransome.
Machinery for scouring, glossing or otherwise treating leather. (*adjusting tool carriers.*) (*Communicated by Edward Fitzhenry.*)	3037	19th Nov. 1870	William Robert Lake.
Machinery for preparing and washing wool and other fibrous materials, and for mixing and forming fur or materials for felt hat bodies. -	3038	21st Nov. 1870	John Charles Edwards. John Taft.
Self-acting machinery for making and finishing boots and shoes. - - - (*feeding and change motion.*)	3048	21st Nov. 1870	Charles Henry Southall. John Blakey.
Looms for weaving Brussels carpeting - - (*driving gear, &c.*) (*Communicated by George Crompton.*)	3059	22nd Nov. 1870	John Garrett Tongue.
Improvements in brushes and in machinery for manufacturing the same. (*saw-shaped feeder.*) (*Communicated by Oscar Dunsmore Woodbury, Edwin Channing Woodbury, John Jay Sibley and Hiram Cornelius Covert.*)	3065	23rd Nov. 1870	Alfred Vincent Newton.
Improvements in the manufacture of iron and steel and castings of the same, and in apparatus employed therefor. (*producing cross heads, cranks, &c.*) (*Communicated by John Ware Middleton.*)	3087	24th Nov. 1870	George Haseltine.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
A combination of instrumentalities for imparting horizontal reciprocating movements to a pendulous rod or suspensory.	3090	24th Nov. 1870	Patrick Lennox.
An improved machine for hulling, cleaning, polishing and grinding rice, wheat and other grain or seed, and for similarly treating various other substances.	3100	25th Nov. 1870	Samuel Gardiner.
Apparatus or machinery employed in the manufacture of sheet glass and other objects made of glass. (*moving along the cooling tunnel.*)	3101	26th Nov. 1870	Samuel Bowen.
Machinery for drilling or boring rocks and other mineral substances in mining, tunnelling, quarrying and other like operations. (*feed screw and automatic feed.*)	3131	29th Nov. 1870	Fenner Ballou Taylor.
Improved machinery for cutting loaf sugar - - (*moveable feed clamp.*) (*Communicated by George Henry Moller.*)	3151	1st Dec. 1870	Alfred Vincent Newton.
Machinery for combing cotton and other fibrous materials. (*feeding the material.*)	3171	2nd Dec. 1870	George Little.
Embroidering machines - - - - (*moving needle carriage, cam shaft, &c.*) (*Communicated by Henry Rieter and John Wehrli.*)	3177	3rd Dec. 1870	Henry Bernoulli Barlow.
Improvements in machinery for winding cops, and in shuttles for weaving cops. (*producing traverse.*)	3185	3rd Dec. 1870	John Combe.
"Jiggers or dummy" machines used in the manufacture of leather, artificial or otherwise. - (*producing a variable traverse motion.*)	3212	7th Dec. 1870	Edward Kitchin. Matthew Kitchin.
Construction of reaping and mowing machines - (*raising and lowering platform and knives, adjusting, &c.*)	3237	9th Dec. 1870	Thomas Read.
An improved mill or machine for grinding corn or grain or other substances of a like nature. (*elevating the meal.*)	3238	9th Dec. 1870	John Fletcher.
Apparatus for moulding or shaping clay and other plastic materials for the production of bricks, tiles and other articles. (*driving by hydraulic power.*)	3251	12th Dec. 1870	George William Hick.
Improvements in apparatus for ploughing and cultivating land by direct traction, part of which apparatus may also be used for driving thrashing and other machines.	3287	15th Dec. 1870	Thomas Wilkinson.
A mode or modes of and apparatus for folding longitudinally and changing the planes of motion of travelling sheets or webs, which improvements are partly applicable to the driving belts of skewed pullies. (*guiding belting for transmitting power.*)	3319	19th Dec. 1870	Archibald Sandeman.
Machinery for shearing metals - - - (*adjusting the cutting discs; arrangement of guides.*) (*Communicated by Robert Briggs.*)	3332	21st Dec. 1870	Walter Williams.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PROPELLING, &c.—*continued.*			
Certain improvements in self-acting mules (*giving motion to the spindles.*)	3338	21st Dec. 1870	Samuel Oddy.
Improved treadle mechanism chiefly designed for operating sewing-machines. (*Communicated by George Willey.*)	3375	24th Dec. 1870	George Haseltine.
Sewing-machines (*actuating presser finger.*)	3377	27th Dec. 1870	Michael Heinrich Keranul.
Machinery for manufacturing metal tubes (*feed rolls, guides, &c.*) (*Communicated by Stephen Paschall Morris Tasker.*)	3391	29th Dec. 1870	William Robert Lake.
Machinery or apparatus used in the preparation of cotton or other fibrous materials for spinning. (*feed mechanism.*)	3401	31st Dec. 1870	James Walsh.
For driving bands, *see* "STRAPS."			
For adjusting fire-arms, *see* "FIRE-ARMS."			
PUMPS; PUMPING AND RAISING WATER AND OTHER LIQUIDS; PUMP PISTONS AND PACKINGS; SHIPS' PUMPS; TURBINES; BEER ENGINES.			
Cocks and valves (*for pumps.*)	38	5th Jan. 1870	Edmund Edwards.
Packing of pistons, glands, pipe and other joints (*and pump rods.*)	47	6th Jan. 1870	George Dominicus Kittoe. Peter Brotherhood.
Filters or other apparatus for the purification of water or other liquids under a high pressure. (*far pumping engines.*)	78	11th Jan. 1870	John Edward Lipscombe.
Steam-engines applicable for marine and other purposes. (*applicable for pumping.*)	96	12th Jan. 1870	William Denison. Henry Teall.
Apparatus for drawing or raising and forcing liquids.	133	15th Jan. 1870	Francis George Fleury.
Improvements in apparatus used in the manufacture of gas, part of which apparatus is also applicable for ventilating mines, for promoting combustion, and for pumping, measuring and forcing fluids.	259	28th Jan. 1870	Edmund Small Cathels. David Terrace.
Motive-power engines and steam generators to be used therewith, suitable for domestic purposes. (*driving pumps.*) (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johnson.
Obtaining motive-power by means of steam	311	2nd Feb. 1870	William John Hodge. John William Greayer.
Machinery for shearing and washing sheep or other animals. (*rotary engine available as a pump.*)	394	10th Feb. 1870	John Charles Wilson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PUMPS, &c.—*continued.*			
Improvements in utilising water pressure in raising liquids, and in apparatus therefor, also in pressure-reducing valves for the said apparatus and applicable otherwise. - - -	398	10th Feb. 1870	William McGeorge Mason. Thomas Lockerbie.
An improved horizontal pump - -	464	17th Feb. 1870	Laurent Luçon. Zoé Peigné, Widow Kern.
Hydraulic apparatus for raising and forcing water	556	25th Feb. 1870	William Bradshaw Leachman.
An improved method of and apparatus for producing and utilising a fall of water. (*as a turbine.*) (*Communicated by Doctor Heiman Sanders, Ezn.*)	557	25th Feb. 1870	William Robert Lake.
A new or improved rotary engine - -	584	28th Feb. 1870	Abraham Ripley.
An improved apparatus for feeding or supplying steam generators with water, which said apparatus is applicable to the raising and forcing of water and other liquids. (*Communicated by Camille Faure.*)	608	2nd March 1870	Thomas Brown.
Machinery for propelling vessels and aerial machines by reaction, parts of which are applicable to forcing fluids for other purposes.	623	3rd March 1870	Richard Boyman Boyman.
An improved apparatus for use in drawing and forcing air, water and other fluids.	706	10th March 1870	Charles Aston Winder.
Apparatus for raising and forcing fluids and for cleaning suction strainers by steam. (*Communicated by Alexander Friedmann.*)	779	16th March 1870	John Clayton Mewburn.
Turbine water wheels - - - - (*Communicated by Henry Allen Chadwick.*)	870	24th March 1870	William Robert Lake.
Steam-engines - - - - (*adapted for steam pumps.*)	873	25th March 1870	Alexander Baumann.
Pumps or apparatus for raising water and sand, mud or other disintegrated substances. (*Communicated by Barton Howard Jenks.*)	907	28th March 1870	William Edward Newton.
A new or improved apparatus for registering or indicating figures or numbers, applicable to seats of chairs, weighing machines and other useful purposes. (*for beer engines.*)	950	31st March 1870	Joseph Bailey.
Improvements in steering gear, and in machinery for starting, stopping and reversing heavy steam-engines and turrets, and for discharging cargo. (*automatic pumping apparatus and hydraulic cylinders.*)	1018	7th April 1870	Andrew Betts Brown.
Rotary engines and pumps - - -	1056	11th April 1870	George Henry Ellis.
Water-feeding apparatus for boilers - - (*drawing water at a high temperature.*)	1103	14th April 1870	Paul Narcisse Joseph Macabies.
An improved distributing apparatus to be applied to garden hose, syringes and for other like purposes.	1132	19th April 1870	Samuel Barton, the younger.
Apparatus for lifting, forcing or conducting liquids, gases or air. - - - -	1262	3rd May 1870	James Anthony Emslie. James Thomas Emslie.
Steam pumping or blowing engines - - (*Communicated by James Riley Maxwell and Ezra Cope.*)	1413	17th May 1870	Martin Benson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PUMPS, &c.—*continued.*			
Lift and force pumps - - -	1455	19th May 1870	Joseph Breeden.
Motive-power engines - - - - (*mine pumping engines.*)	1504	24th May 1870	John Yule.
Improvements in motive-power, and in machinery, apparatus or appliances to be used in connection therewith. (*applicable to turbines.*)	1537	27th May 1870	William Astrop.
Meters, pumps or other engines for water or other liquid.	1634	6th June 1870	Alfred Willmer Pocock.
An improved packing for pistons, piston rods and other rods. (*pumps.*)	1665	9th June 1870	John Scaife.
Rotary engines and pumps - - -	1679	10th June 1870	Robert Thomas Yeadon Johnson.
Improvements in apparatus for the supply of water to water-closets, urinals, lavatories, buildings and streets, some of which improvements are applicable to other purposes. (*application to the rising mains of pumps.*)	1713	15th June 1870	Henry Law.
Rotary engines - - - - - (*for pumping water.*)	1761	21st June 1870	James Outram.
Steam-engines - - - - - (*water pumps.*)	1818	27th June 1870	Vincent Rastouin.
Pumping or forcing apparatus for hydraulic presses, and for compressing or exhausting elastic fluids.	1947	9th July 1870	Thomas Bruce.
Improvements in repairing worn or damaged rails of permanent way, and in the combination and arrangement of machinery or apparatus employed therein. (*maintaining a circulation of water.*)	2009	15th July 1870	Hugh Baines.
Rotary engines - - - - - (*pumps.*)	2010	15th July 1870	Richard Dudgeon.
Treatment of sewage or other liquids or solutions, and the production therefrom of manurance, precipitates or other solids, as also for raising sewage or other liquids or matters by floating tanks or by the action of tidal waters.	2032	19th July 1870	Henry Malcolm Ramsay.
An improved wind engine or apparatus for obtaining and applying motive-power. - - (*for pumping.*)	2033	19th July 1870	Charles Horton Plowright. William Plowright.
Apparatus for compressing air and raising and forcing fluids. (*forcing water to an elevated reservoir.*)	2224	10th Aug. 1870	Nicholas Demetrius Spartali.
Pumps for raising and forcing liquids - - (*Communicated by George C. Bishop.*)	2228	11th Aug. 1870	Edmund William Pyle Taunton.
Means and apparatus for working brakes for the rolling stock of railways and tramways, as also for working feed-water pumps in connection therewith. (*Communicated by George Westinghouse, junior.*)	2235	11th Aug. 1870	Charles Denton Abel.
Improvements in motive-power engines, which improvements are also in part applicable as brakes and dynamometers. (*exhausting or forcing pump.*)	2285	18th Aug. 1870	Thomas Ivory.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PUMPS, &c.—*continued.*			
Pumps	2319	23rd Aug. 1870	Frederick Holmes.
Improvements in propellers, pumps and blowers	2416	6th Sept. 1870	William Walker.
Construction of firebars, and for the employment of them for heating the feed for generating steam and for keeping the bars cool. (*for pumping feed water.*)	2459	12th Sept. 1870	Charles Stephens.
An improved type casting, breaking, rubbing and setting machine. (*pump and nozzle.*)	2527	20th Sept. 1870	John Alfred Thomas Overend.
Motive-power engines (*for pumping mines, &c.*)	2619	1st Oct. 1870	John Yule.
Combined lifting and force pumps (*Communicated by Isaac H. Gustin.*)	2633	4th Oct. 1870	George Haseltine.
Means or apparatus for raising and measuring beer and other liquids.	2651	6th Oct. 1870	Cuthbert Burnett.
Direct-acting steam engines (*for driving pumps.*)	2657	7th Oct. 1870	Herbert Vosper.
Double-acting pumps	2710	14th Oct. 1870	James Bain.
Production of motive-power and appliances connected therewith. (*pumps or fire-engines.*)	2729	17th Oct. 1870	George Bell Galloway. George Thomas Galloway.
Raising and registering the measurements of wine, spirits and other fluids by means of the self-registering fluid engine.	2732	17th Oct. 1870	Matthias Smith. George Frederick Waldener. Arthur Carey Lee.
Improvements in spiral pumps, and in apparatus employed in connection therewith.	2786	22nd Oct. 1870	Thomas Schoenberger Blair.
Steam fire-engines	2836	27th Oct. 1870	Edward Field. Richard Moses Merryweather.
Spiral pumps	2857	31st Oct. 1870	Thomas Schoenberger Blair.
Machinery for raising and forcing fluids	2972	12th Nov. 1870	Richard Potter Pearn. Frank Kelsey Pearn.
Condensers for steam pumps (*Communicated by William Craig and Henry Lefferts Brevoort.*)	3049	21st Nov. 1870	Alfred Vincent Newton.
An automatic ventilator, alarm and pump for vessels. (*Communicated by William FitzJames Thiers, P. D. Rodney and Edward Parkman.*)	3117	28th Nov. 1870	Benjamin Joseph Barnard Mills.
Apparatus for injecting or otherwise propelling liquids.	3129	29th Nov. 1870	Robert Sinclair.
Improvements in blowing engines, and in valves for the same, and applicable otherwise. (*and valves for pumps.*)	3174	3rd Dec. 1870	William Hargreaves. William Inglis.
Apparatus for injecting and ejecting fluids (*water elevators.*) (*Communicated by Alexander Friedmann.*)	3225	8th Dec. 1870	John Clayton Mewburn.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
PUMPS, &c.—*continued.*			
Improvements in the means of exhausting or charging receivers, principally applicable for working pneumatic tubes, for raising fluids, and for exhausting steam in steam-engines, including particular arrangements of apparatus for carrying out these several objects. (*for raising water.*)	3255	12th Dec. 1870	Charles William Siemens.
Steam pumping-engines - - - -	3387	29th Dec. 1870	John Wolstenholme. Edward Holt.
PURSES AND FASTENINGS.			
Manufacture or production of gloves - - (*with a purse inside the palm.*)	333	5th Feb. 1870	George Holmes. Joseph Winterton.
An improved spring fastening for securing purses, pocket books, cigar cases and similar articles, and for other like purposes. (*Communicated by Mathurin Brouard.*)	1244	30th April 1870	William Robert Lake.
Fastenings applicable to purses and such like articles (*Communicated by Paul Sormany.*)	1450	19th May 1870	Joseph Schloss.
Frames for portemonnaies, pocket books, cigar cases and similar articles. (*Communicated by Sébastien Jacobsohn and Francois Massin.*)	1893	4th July 1870	William Edward Gedge.
RAGS AND WASTE; SEPARATING FIBRES FROM FABRICS.			
Treating shoddy and other animal waste to obtain ammonia and salts of ammonia therefrom. -	58	7th Jan. 1870	Richard Morris. Mulgrave Daniel Prince.
Machinery for preparing fibres for spinning - (*and waste.*) (*Communicated by André Koechlin.*)	106	12th Jan. 1870	Alfred Vincent Newton.
Rag engines - - - - -	132	15th Jan. 1870	Edwin Grundy Wrigley.
An improved method of re-utilizing caustic soda lye. (*in boiling rags, &c.*)	365	8th Feb. 1870	Emil Kruger.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Rags, &c.—*continued.*			
Utilization of the dried or "hard" waste made in the process of wet flax spinning.	420	12th Feb. 1870	Jonas Brown.
An improved process for the conversion of the hard waste of flax, hemp and tow into thread or yarn.	488	18th Feb. 1870	Jonas Brown.
A new method or methods for extracting and purifying mill waste refuse, flock material, and removing dyed colours, and re-dying the same into other colours for re-manufacture, for using certain agents employed in the process and thereby making a manure.	530	23rd Feb. 1870	George Rydill.
Bleaching vegetable fibres - - - (*and waste of flax for paper pulp.*)	693	9th March 1870	Harold Potter.
Carding engines for carding hemp, flax, tow, china grass, wool, silk, cotton and all other fibrous substances, both animal and vegetable; also for carding the waste of flax, hemp and tow, whether hard or soft waste, as well as cotton waste, cop bottoms, waste yarns or any other waste or yarns, the produce of any fibrous substances, either animal or vegetable; also for pulling and carding carpets, stockings, hosiery, rags, fents or remnants of any textile or felted or knitted fabrics of hemp, flax, tow, china grass, wool, silk, cotton or other fabric, the produce of any fibrous substances either animal or vegetable.	734	12th March 1870	Jonas Brown.
Treatment of fibrous materials suitable for the manufacture of paper. (*rags.*)	748	14th March 1870	Thomas Routledge.
Improvements in using the waste threads of condensing carding engines and in machinery to be used for that purpose.	1079	13th April 1870	Eli Weare.
An improved mode of utilizing cotton waste and other refuse fibrous materials for cleaning machinery. (*Communicated by Anthony Peple.*)	1089	13th April 1870	William Robert Lake.
Washing-machines - - - - (*rags.*) (*Communicated by Joshua Thomas Owen.*)	1512	25th May 1870	William Robert Lake.
Rag engines - - - -	1633	6th June 1870	Daniel Bentley. John Broad Jackson.
Manufacture of padded or wadded quilts or other padded or wadded articles for wearing apparel or other purposes. (*from carded waste.*)	2961	10th Nov. 1870	Benjamin Lockwood.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
RAILWAYS AND RAILWAY CARRIAGES.			
I.—Permanent Way, Rails, Rail-joints, Chairs and Sleepers; Portable Railways, Atmospheric Railways, Tramways.			
Suspension tramways or roads - - -	4	1st Jan. 1870	Richard Albert Moll.
Construction of joints for uniting and securing the ends of railway rails.	55	6th Jan. 1870	Alfred Buckingham Ibbotson.
A new and improved system of constructing railroads with jaunting cars and posts and rail ways.	88	12th Jan. 1870	Henry Temple Humphreys.
Improvements in tramways and in vehicles to be run thereon. (*Communicated by William Judson Addis.*)	90	12th Jan. 1870	Benjamin Joseph Barnard Mills.
Bolts for securing parts of the permanent way of railways. - - - -	93	12th Jan. 1870	Louis Sterne. James Godfrey Warner.
Improvements in rails, chairs and joints for the permanent way of railway and in machinery for manufacturing such rails. - - -	101	12th Jan. 1870	Alfred Buckingham Ibbotson. Johan Anderson Lindblad.
Construction of the permanent way of railways -	111	13th Jan. 1870	Evan Leigh.
Improvements in permanent way and in wheels to be used therewith. (*Communicated by Alphonse Mention.*)	248	27th Jan. 1870	John Bevan Smith.
Improvements in railways and in rolling stock to be used therewith.	388	10th Feb. 1870	Henry Temple Humphreys.
Subaqueous communications and apparatus for effecting the same. (*for transit of passengers and goods.*)	403	11th Feb. 1870	John Imray.
Improvements in locomotion and in the apparatus to be employed therein. (*using wheels instead of rails.*)	446	15th Feb. 1870	Bewicke Blackburn.
Railways, tramways, common roads, and machines and vehicles to run thereon.	512	22nd Feb. 1870	William Bridges Adams.
Construction of the permanent way of railways -	552	24th Feb. 1870	George Augustus Haddart.
Permanent way of railways - - - (*Communicated by Daniel Rice Pratt.*)	636	3rd March 1870	William Robert Lake.
Construction of rails for railways - -	678	8th March 1870	John Piegrome.
Construction of railways and tramways for conveyances to move upon.	733	12th March 1870	Alexander Kay.
Improvements in the construction of roads and ways and in the materials employed therein, which materials are also applicable to other purposes for which asphalt is generally employed. (*and railways.*) (*Communicated by Leopold Wiart.*)	784	16th March 1870	John Henry Johnson.
Wood paving with or without rails - -	817	19th March 1870	Samuel Norris.
Improvements in wheels for rail or tramway locomotive engines and carriages or vehicles and in the permanent way for the same.	827	19th March 1870	Robert Francis Fairlie.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
RAILWAYS, &c.—*continued.*			
Improvements in locomotion and in the means to be employed therein. (*continuous girder way.*) (*Communicated by Nicolas Joly.*)	847	22nd March 1870	John Henry Johnson.
Improvements in the manufacture of bars, plates, and sheets of steel, or steel and iron combined, and in the process of welding employed in such manufacture. (*for railway rails.*) (*Communicated by John Absterdam.*)	856	23rd March 1870	William Robert Lake.
Apparatus for locking and unlocking gates on railways.	903	28th March 1870	Silas Paul Baker.
Chairs and fastenings for rails for railways -	947	31st March 1870	William Bewick Quelch.
Construction of railways - - - -	949	31st March 1870	George Augustus Huddart.
Improvements in means and apparatus for seasoning, injecting and preserving wood, part of which improvements is applicable for treating canvass, cordage and other substances to render them impervious to decay. (*railway sleepers.*)	1041	8th April 1870	John Bennington Blythe.
Apparatus for breaking and crushing stones for use in macadamizing roads, for railway ballast, for employment in the manufacture of béton of French concretion or mortar, and for producing sand or gravel of various degrees of coarseness. (*Communicated by Claude Leon Desmolins.*)	1239	30th April 1870	Arthur Charles Henderson.
Machinery or apparatus for tilling, ploughing, harrowing, digging and cultivating land. (*levelling land for railways.*)	1263	3rd May 1870	Henry Belmont.
Improvements in apparatus for preventing railway carriages running off the line, in wheels for enabling them to pass round curves, in operating points or switches automatically, and in securing rails to chairs or supports.	1269	3rd May 1870	John Tiranoff.
Improvements in the existing iron rails of railways and of tramways, and in the construction of rails for future lines of railways and tramways.	1276	4th May 1870	William Nelson Hutchinson.
Permanent way of railways - - -	1303	6th May 1870	Alexander Hill Macnair.
Means or method of securing or locking screw-bolts and nuts. (*on fish plates of rail joints.*) (*Communicated by Robinson Rutter.*)	1323	9th May 1870	Bristow Hunt.
Locking screw-bolts and nuts - - - (*on fish plates used on railways.*)	1328	10th May 1870	Henry Johnson. Robert John Lecky.
Locking or securing nuts for screw-bolts employed for railway or other purposes.	1348	11th May 1870	Edwin Smith.
Apparatus for removing snow from lines of railway.	1366	13th May 1870	John Wheeler Elliot.
Securing the nuts of the screw-bolts used in fish-jointing the rails of railways. - - -	1465	20th May 1870	William Barwell. George Bond Smith.
Improvements in the construction of tramways and in engines and carriages employed thereon.	1475	21st May 1870	Edward Ellis Allen.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
RAILWAYS, &c.—*continued.*			
An improved railway sleeper for permanent ways -	1542	27th May 1870	Richard Gammon.
Construction of rails for railroads - - -	1637	6th June 1870	Curtis Tuttle Forrest.
Ventilation of tunnels - - - -	1678	9th June 1870	John Dickinson Brunton.
Improvements in railways and in the engines and carriages to run thereon. (*Communicated by Francois Maurice Marin.*)	1771	21st June 1870	John Henry Johnson.
Rails for railways - - - - - (*Communicated by Adolf Neumann.*)	1827	27th June 1870	William Robert Lake.
Improvements in portable or moveable railways, and in the adaptation of the same to various constructions of wheeled carriages.	1946	9th July 1870	Edmund Leaby.
Permanent way of railways and tramways - -	1965	12th July 1870	George Featherstone Griffin.
Machinery or apparatus for reducing wood, metal or other hard material to fixed patterns. (*railway trenails.*) (*Communicated by Frederick Baldwin.*)	1967	14th July 1870	Giovanni Scoccia.
Improvements in rails for railways and tramways, and in wheel tyres for railways and tramways. -	2008	15th July 1870	John Wakefield. Daniel McDowell.
Improvements in repairing worn or damaged rails of permanent way, and in the combination and arrangement of machinery or apparatus employed therein.	2009	15th July 1870	Hugh Baines.
Rails and chairs for railways and tramways -	2097	19th July 1870	William Edward Winby.
Improvements in the existing iron rails of railways and of tramways, and in the construction of rails for future lines of railway and tramways.	2134	30th July 1870	William Nelson Hutchinson.
Permanent way relating to iron chairs and sleepers	2197	8th Aug. 1870	John Edgar Lowe.
Tramways amd road surfaces - - -	2340	25th Aug. 1870	Samuel Dyer Tillman.
Permanent way of railways - - - (*Communicated by Daniel Rice Pratt.*)	2385	1st Sept. 1870	William Robert Lake.
Construction of railway chairs - - -	2390	2nd Sept. 1870	John Marshall. Harry Jones Harman.
Girders to be used in bridges, subways, viaducts, railway works and every description of building and other structures.	2393	2nd Sept. 1870	Constantine Henderson.
Construction of the permanent ways of railways -	2445	9th Sept. 1870	George Augustus Haddart.
Machinery and apparatus for transporting passengers, goods and other articles. (*Communicated by Myles Cooper.*)	2624	3rd Oct. 1870	Leonard Cooper.
Machinery for making wrought-iron railway sleepers, and applicable for shaping metals for other purposes. - - - -	2763	20th Oct. 1870	Matthew Andrew Muir. James Mellwham.
Securing the rails in the chairs for the permanent way of railways.	2803	25th Oct. 1870	William Edwin Buckland.
[illegible]t railway carriages and in [illegible]treet and other railways.	2849	29th Oct. 1870	John Coope Haddan.
- - - -	2910	4th Nov. 1870	Thomas Richardson. John William Richardson. Adam Spencer.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
RAILWAYS, &c.—*continued.*			
Means or method of securing or locking screw bolts and nuts. (*on fish plates of rail joints.*) (*Communicated by Robinson Rutter.*)	2950	9th Nov. 1870	Bristow Hunt.
Permanent way or track of tramways - -	2952	9th Nov. 1870	William John Cockburn-Muir.
Machinery for cutting or shaping wood - - (*forming wooden sleepers, railway chairs, &c.*)	3029	18th Nov. 1870	Allen Ransome.
Improved means for securing screw nuts and keys or wedges. (*Communicated by Alexander Campbell.*)	3064	23rd Nov. 1870	Alfred Vincent Newton.
Manufacture of longitudinally-corrugated beams or rails of steel or iron for railways and architectural and other purposes.	3144	30th Nov. 1870	Richard Montgomery.
Improvements in or connected with railway chairs	3204	6th Dec. 1870	Robert Bond. Thomas Norman Charles.
Improved means of attaching top plates or bars to railway rails.	3205	6th Dec. 1870	William Nelson Hutchinson.
An entire new system for constructing permanent way with improved method of constructing and working rolling stock in connection therewith.	3230	9th Dec. 1870	Edmund Beatty Lockyer.
Improvements in the means for exhausting or charging receivers, principally applicable for working pneumatic tubes, for raising fluids and for exhausting steam in steam-engines, including particular arrangements of apparatus for carrying out these several objects. (*despatch tubes.*)	3255	12th Dec. 1870	Charles William Siemens.
Improvements in fog or danger signals and in a novel method of laying the same in position and in removing the same when exploded or not used. (*form of inserted rail.*)	3301	17th Dec. 1870	Edward Keirby.
Permanent way for railways and tramroads -	3316	19th Dec. 1870	Edward Foulger.
A new system of railway adapted for the traffic of crowded streets of cities or towns or other places, of carriages for such railway, and means for propelling and stopping the same, part of which is applicable to the ordinary railway system.	3366	28th Dec. 1870	William Robertson.
II.—Railway Switches, Points, Crossings and Turntables.			
Machinery or apparatus for working signals and switches on railways.	12	3rd Jan. 1870	Harry Herbert Cochrane.
Switch apparatus for operating the points and crossings of the permanent way of railways. (*Communicated by James Walker Robertson.*)	83	11th Jan. 1870	Charles Martin Wade.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
RAILWAYS, &c.—*continued.*			
An improved method of and apparatus for operating railway switches. (*Communicated by Adolph Schnabel and Theodore Henning.*)	215	24th Jan. 1870	William Robert Lake.
Apparatus for working and locking or securing railway points and signals.	569	25th Feb. 1870	John Saxby. John Stenson Farmer.
An improved apparatus for working points and signals on railways.	746	14th March 1870	James John Stevens. James John Frederick Stevens. Warwick Alan Stevens.
Apparatus for working and locking railway switches and signals.	971	2nd April 1870	William Smith.
Improved means for working railroad switches (*Communicated by James Davis.*)	1084	13th April 1870	Alfred Vincent Newton.
Improvements in apparatus for preventing railway carriages running off the line in wheels, for enabling them to pass round curves, in operating points or switches automatically, and in securing rails to chairs or supports.	1269	3rd May 1870	John Tiranoff.
Railway switches or junction points	1568	28th May 1870	Richard Price Williams.
Apparatus for working railway switches and signals	2218	10th Aug. 1870	John Mortimer Heppel.
Railway locking apparatus for switches and signals.	2305	20th Aug. 1870	Richard Christopher Rapier.
Machinery or apparatus for working and interlocking railway switches, tongues or movable points and signals.	2586	29th Sept. 1870	John Brunton. Richard Christopher Rapier.
Machinery or apparatus for locking or controlling the hand levers of railway points and signals.	3124	29th Nov. 1870	William Buck.
III.—Railway Carriages; Coupling, Uncoupling and Altering Position of Carriages and Engines.			
Method of and apparatus for fastening and unfastening the doors of railway carriages.	49	6th Jan. 1870	John Michels.
A new and improved system of constructing railroads with jaunting cars and posts and rail ways.	88	12th Jan. 1870	Henry Temple Humphreys.
Improvements in tramways and in vehicles to be run thereon. (*Communicated by William Judson Addis.*)	90	12th Jan. 1870	Benjamin Joseph Barnard Mills.
Improved apparatus for coupling railway carriages	152	18th Jan. 1870	James Mackenzie.
Improvements in apparatus for the passage and control of cables and other chains and in apparatus for auxiliary propulsion. (*grab links for coupling railway carriages.*)	175	20th Jan. 1870	James Mase Kilner.
Improvements in railways and in rolling stock to be used therewith.	388	10th Feb. 1870	Henry Temple Humphreys.
Mode of reducing the friction of pivots turning on oscillating levers, which system is also applicable to wheeled vehicles, especially waggons or railway trucks.	391	10th Feb. 1870	Gilbert Eguillon.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
RAILWAYS, &c.—*continued.*			
Improvements in locomotion and in the apparatus to be employed therein.	446	15th Feb. 1870	Bewicke Blackburn.
Improved safety apparatus for locomotives and brake wagons.	454	16th Feb. 1870	Laurence Hill.
Railways, tramways, common roads, and machines and vehicles to run thereon.	512	22nd Feb. 1870	William Bridges Adams.
Apparatus for connecting and disconnecting railway carriages and trucks.	522	23rd Feb. 1870	William Crombleholme.
Railway carriages - - - - -	613	2nd March 1870	James Harman.
Couplings for railway carriages - -	622	3rd March 1870	James Broadley.
Improvements in the application of power for the propulsion of vehicles on common roads or railways and in apparatus connected therewith. (*constructing waggons or trucks.*) (*Communicated by Henri Adolphe Corbin.*)	664	5th March 1870	Alexander Melville Clark.
Improvements in the rolling stock of railways and tramways, also partly applicable to ordinary vehicles.	707	10th March 1870	John William Grover.
Apparatus for raising and lowering heavy bodies - (*trains of railway carriages.*)	747	14th March 1870	William Arkell.
Construction of railway and other waggons -	782	16th March 1870	Julius Homan.
The application of cork for preventing loss of heat by radiation, and also for protecting bodies against heat. (*encasing railway carriages.*)	791	17th March 1870	Germond de Lavigne.
Apparatus for securing the doors of railway carriages and preventing the opening of the same while the train is in motion.	826	19th March 1870	Charles James Hislop Warden.
Improvements in locomotion and in the means to be employed therein. (*carriages.*) (*Communicated by Nicolas Joly.*)	847	22nd March 1870	John Henry Johnson.
Improvements in locks, latches, or bolts for fastening the doors of railway carriages, which improvements are also applicable to other purposes.	877	25th March 1870	William Rogers Thomson.
Improved means for fastening and securing the doors of railway carriages and other doors.	879	25th March 1870	Robert Frederick Muller Harcourt.
Means or arrangements for the safety and convenience of railway passengers. (*bolting the carriage doors.*)	963	2nd April 1870	Joseph Chrimes.
Improvements in the construction of omnibuses and in apparatus for indicating the number of passengers entering therein. (*from tramways.*)	1116	16th April 1870	Thomas Wood.
Improved apparatus for regulating the lift of railway and other carriage windows.	1284	5th May 1870	George Ingram.
Construction of vehicles used on railways, tramways or common roads.	1432	18th May 1870	Walter Brodie.
Improvements in the construction of tramways and in engines and carriages employed thereon.	1475	21st May 1870	Edward Ellis Allen.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
RAILWAYS, &c.—*continued.*			
Improved self-adjusting couples for connecting and disconnecting railway carriages, locomotives and other vehicles used on railways.	1598	2nd June 1870	Walker Vaughn Pallisn.
Couplings for railway carriages - - - - (*Communicated by Richard Campion and James W. Thomson, junior, and John H. Michener and Samuel L. Ward.*)	1599	2nd June 1870	William Robert Lake.
Improvements in the means or apparatus employed for retaining the windows of railway or other carriages or other windows when raised or lowered in any desired position.	1714	15th June 1870	Michael Jacob.
Improvements in railways and in the engines and carriages to run thereon. (*Communicated by François Maurice Marin.*)	1771	21st June 1870	John Henry Johnson.
Apparatus for effecting the delivery of mail bags and parcels to railway trains in motion. (*Communicated by William McCabe and Francis Wayland Glen.*)	1854	29th June 1870	William Robert Lake.
Improving latches, locks, bolts, fastenings in general, but more especially the fastenings of doors and particularly the fastenings of railway carriage doors.	1986	14th July 1870	James William Ayres.
An improved spring-fastener for railway carriage and other windows.	2043	20th July 1870	John Edward Makins.
Door fastenings - - - - - (*for carriages.*)	2054	20th July 1870	David Jones.
Combining or coupling locomotives and other railway rolling stock. - - - - -	2077	23rd July 1870	Henry Dubs. Sampson George Goodall Copestake.
Improvements in carriages for running on circular railways and in the means or method of propelling the same.	2222	10th Aug. 1870	Abraham Waddington.
Improved couplings for railway carriages and vehicles.	2244	12th Aug. 1870	Peter Brimelow.
Locks for railway and other carriages - -	2249	12th Aug. 1870	John Matthias Hart.
Certain improvements in fastenings for doors -	2251	12th Aug. 1870	Philip Waters.
Improved means or apparatus for enabling tramway and other omnibuses or vehicles to run upon and leave tramrails at any point. - -	2357	27th Aug. 1870	George Gore. James Meacock.
Springs for railway carriages - - - (*Communicated by Richard Vose.*)	2829	27th Oct. 1870	William Robert Lake.
Improvements in street railway carriages and in permanent way for street and other railways.	2849	29th Oct. 1870	John Coope Haddan.
An improved means or apparatus for raising and lowering windows, particularly applicable to railway and other carriage windows. - -	2896	3rd Nov. 1870	John Jones. Howard Busby Fox.
Improved mechanical arrangements for coupling and uncoupling railway locomotives, carriages, trucks and vehicles.	2945	8th Nov. 1870	James Broadley.
An improvement in constructing railway carriages and other road vehicles to ensure further ease and safety in travelling.	2973	12th Nov. 1870	Joseph Chrimes.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
RAILWAYS, &c.—*continued.*			
Couplings for railway carriages - - - (*Communicated by Richard Campion, James W. Thomson, junior, John H. Michener, and Samuel L. Ward.*)	3120	28th Nov. 1870	William Robert Lake.
Machinery for drilling or boring rocks and other mineral substances in mining, tunnelling, quarrying and other like operations. (*frame and carriage on wheels to run on railways.*)	3131	29th Nov. 1870	Fenner Ballou Taylor.
An improved apparatus or means for instantly detaching railway carriages from the engine while the train is in motion.	3164	2nd Dec. 1870	Joseph Robert M'Voy.
An entire new system for constructing permanent way, with improved method of constructing and working rolling stock in connection therewith.	3230	9th Dec. 1870	Edmund Beatty Lockyer.
Springs chiefly designed for railway and other carriages. (*Communicated by Patrick Sarsfield Devlan, Isaac Pennington Wendell and Stephen Paschall Morris Tasker.*)	3290	15th Dec. 1870	William Robert Lake.
Apparatus for coupling and disconnecting railway carriages and trucks.	3311	19th Dec. 1870	Frederick Hawley.
Improvements in locks and fastenings, especially applicable for railway carriage and other doors.	3356	22nd Dec. 1870	James Morrison.
A new system of railway adapted for the traffic of crowded streets of cities or towns or other places, of carriages for such railway, and means for propelling and stopping the same, part of which is applicable to the ordinary railway system.	3396	28th Dec. 1870	William Robertson.
An improved construction of fastening for doors - (*railway carriage doors.*)	3403	31st Dec. 1870	James William Ayres.
See also { "WHEELS FOR CARRIAGES." "AXLES."			
For ventilating railway carriages, *see* "VENTILATION."			
For lighting railway carriages, *see* "LAMPS."			
IV.—Railway Buffers and Breaks; Retarding and Stopping Trains, Preventing Collisions, &c.			
Improvements in braking or retarding railway trains and in the apparatus or means employed therefor.	262	28th Jan. 1870	Robert Hogg Durie.
Improved safety apparatus for locomotives and brake wagons.	454	16th Feb. 1870	Laurence Hill.
An improved apparatus for producing rotary motion	615	2nd March 1870	Charles Ernest de Lorière.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
RAILWAYS, &c.—*continued.*			
Improvements in the application of power for the propulsion of vehicles on common roads or railways, and in apparatus connected therewith. (*Communicated by Henri Adolphe Corbin.*)	664	5th March 1870	Alexander Melville Clark.
Apparatus for working railway brakes - -	828	21st March 1870	James Stirling.
Improvements in locomotion and in the means to be employed therein. (*using guide wheels as breaks.*) (*Communicated by Nicolas Joly.*)	847	22nd March 1870	John Henry Johnson.
Brakes and starting apparatus for railway carriages (*Communicated by Edward Pugh Jones.*)	1073	12th April 1870	William Robert Lake.
An improved brake applicable to the rolling stock of railways and other vehicles.	1278	4th May 1870	Charles Exter.
An improved friction brake for cars and other purposes. (*Partly communicated by William Leaver.*)	1826	27th June 1870	Eiljah Warren Sandford.
A new propulsion engine to be used for propelling bodies through the water and through the air, and for breaks to railway locomotives and other engines.	2040	20th July 1870	William Murray Ross.
Improvements in the construction of railway buffer and draw springs, and in bearing springs for railway carriages, and in the use of the same for carriages for common roads, such springs being adapted to other purposes. - - -	2144	1st Aug. 1870	Edward Otto. Newton Wilson.
A self-acting brake for wheel carriages - -	2225	10th Aug. 1870	Henry Wycherley. John Wycherley.
Means and apparatus for working brakes for the rolling stock of railways and tramways, as also for working feed-water pumps in connection therewith. (*Communicated by George Westinghouse, junior.*)	2235	11th Aug. 1870	Charles Denton Abel.
An entire new system for constructing permanent way, with improved method of constructing and working rolling stock in connection therewith.	3230	9th Dec. 1870	Edmund Beatty Lockyer.
An improved electrical brake for railway carriages - (*Communicated by Joseph Olmstead.*)	3266	13th Dec. 1870	William Robert Lake.
A new system of railway adapted for the traffic of crowded streets of cities or towns or other places, of carriages for such railway, and means for propelling and stopping the same, part of which is applicable to the ordinary railway system.	3386	28th Dec. 1870	William Robertson.
Improvements in hydraulic breaks for railway rolling stock, partly applicable to the supplying of the tender or feed tank with water.	3395	30th Dec. 1870	George Pearson Renshaw.

See also "SIGNALS."

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
REAPING, MOWING, MAKING HAY, GATHERING IN PRODUCE.			
Lawn-mowing machines (*Communicated by Samuel Colt.*)	59	7th Jan. 1870	William Robert Lake.
Mowing and reaping machines (*Communicated by George Washington Newton Yost, Franklin William Andrews, Lyman Stewart and Henry Allerton Hutson.*)	213	22nd Jan. 1870	William Robert Lake.
Lawn-mowing machines (*Communicated by James Darius Frary.*)	251	28th Jan. 1870	William Robert Lake.
Machines for mowing grass (*Communicated by William Sprague.*)	321	3rd Feb. 1870	William Robert Lake.
Holding fingers used in reaping or mowing machines or other machines of like character.	374	9th Feb. 1870	John Tenwick.
Reaping and mowing machines (*Communicated by Louis Alexis Coutelet.*)	461	17th Feb. 1870	Bristow Hunt.
Improved apparatus for heating knives for reaping and mowing machines in order to the partial hardening of such knives.	502	21st Feb. 1870	Samuel Osborn. William Henry Fawcett.
Apparatus for lifting potatoes and other roots	560	25th Feb. 1870	George Hey Harrison.
Improved means of oiling the bearings and journals of revolving shafts, spindles and pins of reaping and mowing machines. (*Communicated by Walter Abbott Wood.*)	635	3rd March 1870	James Theodore Griffin.
Reaping and mowing machines	669	7th March 1870	William Atkinson Fell.
Improvements applicable to reaping and mowing machines.	677	8th March 1870	Charles James Fox. Robert Larchin.
Improved apparatus for facilitating the gathering and binding of cut crops into sheaves.	699	9th March 1870	Mark Frow.
Lawn edge clippers	742	14th March 1870	George Townsend.
Machines for reaping and mowing (*Communicated by Cyrus Hall McCormick.*)	932	30th March 1870	Thomas James Smith.
Construction of reaping and mowing machines	1161	21st April 1870	William Arundell Oatey.
Improvements in reaping and mowing machines and in apparatus for sharpening the cutters of such machines. (*Communicated by Auguste Bernard Albaret.*)	1165	21st April 1870	John Henry Johnson.
Mowing and reaping machines (*Communicated by Rudolf Eickemeyer.*)	1170	22nd April 1870	George Tomlinson Bousfield.
An improvement in harvesting machines	1282	4th May 1870	Francis Mollett Blyth.
Lawn-mowing machines	1405	16th May 1870	Aaron White Cook Williams. Caleb McKenney Talcott.
Reaping or harvesting machines	1699	13th June 1870	George Lewis.
Improvements applicable to reaping and mowing machines.	1760	21st June 1870	Charles James Fox. Robert Larchin. John Dodd.
Reaping and mowing machines	1765	21st June 1870	Adam Carlisle Bamlett.
Improvements applicable to mowing and reaping machines	1834	28th June 1870	Samuel Hampson. James Higson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
REAPING, &c.—*continued.*			
An improved drying machine (*drying freshly cut crops.*)	1850	29th June 1870	John Lightbody.
Construction of reaping machines	1924	7th July 1870	Thomas Read.
Reaping and mowing machines (*Communicated by Walter Abbott Wood.*)	1960	11th July 1870	James Theodore Griffin.
A new or improved agricultural implement specially adapted for digging potatoes and other similar root crops.	2019	18th July 1870	Alexander Jack.
Machinery for cutting grass or corn	2295	19th Aug. 1870	James Howard. Edward Tenney Bousfield.
Improvements in reaping and mowing machines, parts of which improvements are also applicable to other purposes.	2329	24th Aug. 1870	William Goulding. Austin Hill.
Cutting apparatus of reaping and mowing machines.	2372	30th Aug. 1870	Daniel Pidgeon. William Manwaring.
Reaping and mowing machines (*Communicated by Walter A. Wood.*)	2443	9th Sept. 1870	James Theodore Griffin.
Reaping and mowing machines	2734	17th Oct. 1870	Adam Carlisle Bamlett.
Reaping and mowing machines	2801	24th Oct. 1870	William James Burgess. Charles Thomas Burgess.
Cork-cutting knives or apparatus, applicable also to cutting other substances than cork. (*corn and grass cutters.*)	3010	17th Nov. 1870	Matthew Dodds.
Lawn-mowing machines	3113	28th Nov. 1870	William Milburn.
Construction of reaping and mowing machines	3237	9th Dec. 1870	Thomas Read.
An improved form or construction of knife or cutter and in the modes of applying the same for the purpose of cutting, mowing, reaping or shearing and such like purposes.	3283	15th Dec. 1870	Alexander Charles Brice. William Scantlebury.
Apparatus for preventing nuts working loose in reaping and mowing machines and other machinery or apparatus. (*Communicated by Walter A. Wood.*)	3344	21st Dec. 1870	James Theodore Griffin.
REFLECTORS FOR LAMPS; REFLECTION OF LIGHT.			
Improvements in the preparation of combustible liquids for illuminating purposes, and in lamps for burning such or other combustible liquids. (*and reflectors.*)	63	7th Jan. 1870	George Grainger Tandy. John Andrews Dryden. William Perkins.
Construction of safety lamps used in mining, colliery and other underground operations.	645	21st March 1870	James Allison Hogg, the younger.
Ships' and other signal lamps	1253	2nd May 1870	William Nunn.
Cameras for reflecting and magnifying opaque objects. (*Communicated by Theodore Kung and Henry Strubin.*)	1563	28th May 1870	Emil Adam Strubin.
Mast-head lights, lanterns or lamps	1868	1st July 1870	James Hosken.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
REFLECTORS, &c.—*continued.*			
Improvements in lamps and in the construction of lenses and reflectors.	2529	20th Sept. 1870	James Couper, the younger. William Haden Richardson.
Construction of illuminating and ventilating roofs, and gratings or plates, parts of which are applicable to ordinary footways and carriage ways. (*making the glass act as reflectors.*) (*Communicated by Theodore Hyatt.*)	2755	20th Oct. 1870	John Henry Johnson.
Lamps for the roofs of railway carriages and other purposes. (*construction of reflectors.*)	2982	14th Nov. 1870	William Thomas Tongue.
RETORTS AND CRUCIBLES.			
Apparatus for hinging, adjusting and fastening gas retort lids, covers or doors, and other lids, covers and doors.	3	1st Jan. 1870	Stephen Holman.
Improvements in the manufacture of gas, and in obtaining residual products from such manufacture, and in apparatus to be used in such manufacture.	510	21st Feb. 1870	Frank Clarke Hills.
Apparatus for charging and discharging gas retorts and for other similar purposes.	565	25th Feb. 1870	James John Holden.
A new or improved metal founders' blacking (*construction of retorts for distilling wood refuse.*)	1090	13th April 1870	Frederick Pattison.
Construction of retorts, muffles, pots, and furnaces for reducing zinc and other ores.	1113	16th April 1870	Alfred Borgnet.
Apparatus or arrangements to be used in connection with retorts for the manufacture of gas.	1274	4th May 1870	William Woodward. Adam Woodward, junior.
Improvements in the manufacture of gas and coke, and in the apparatus to be employed in the same manufacture.	1285	5th May 1870	Joseph Bryan Hickmott.
Retorts and retort settings	1410	17th May 1870	Charles Hunt.
Improvements in and apparatus for manufacturing gas for illuminating and heating from coal oils.	1640	7th June 1870	William Wilson.
Machinery or apparatus for supplying coal, cannel, or other substances to gas retorts or ovens, and for withdrawing the same after distillation.	1664	9th June 1870	James William Butler. William David Butler. James Dunbar.
Manufacture of pots or crucibles used in glass furnaces. (*Communicated by Hugo Stimpfl and Johann Stenger.*)	1926	7th July 1870	Carl Holste.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
RETORTS &c.—*continued.*			
Improvements in the preparation of clay, and in the machinery or apparatus for shaping and moulding vegetable and other plastic substances, also for making bricks, tiles, crucibles, and other similar articles.	2389	2nd Sept. 1870	William Carter Stafford Percy.
Vapor or gas-burners - - - - (*Communicated by John Charles Love.*)	2521	19th Sept. 1870	Alexander Horace Brador
Portable apparatus for manufacturing gas - - (*circular retort.*)	2591	29th Sept. 1870	George Symes.
Construction of crucibles or pots used in the manufacture of glass and other materials.	2966	11th Nov. 1870	Edward Bolton.
ROPES, CORDAGE, TWINE, OAKUM, WIRE ROPES.			
Improvements in the manufacture of compound rivetted bands of iron, steel or other metal to be used as a substitute for wire ropes, and in the formation of pullies to be used therewith.	1	1st Jan. 1870	Charles Hodgson.
Attachments to be used with chains, cords, bands and such like pliable articles, especially useful amongst other purposes for securing on the person trinkets and jewellery. (*or ropes on shipboard.*)	26	4th Jan. 1870	Townshend Griffin.
Machinery or apparatus for dressing warps of wool or other fibrous substances and twine. - -	392	10th Feb. 1870	William Houghton. John Bapty.
Machinery or apparatus for the manufacture of ropes, cords and wire ropes.	814	18th March 1870	William Guest.
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation and preserving wood and other materials. (*used on iron and copper wire ropes.*)	986	4th April 1870	Achille Thomas Anquetil.
Machinery for the manufacture of strings and cords.	1476	21st May 1870	Francois Joseph Telliez.
Ropes and cables - - - -	1507	24th May 1870	Robert Henry Pounds.
Treatment of slag and other vitreous material - (*for rope or yarn.*) (*Communicated by Henry Baldwin, jun.*)	1644	7th June 1870	George Tomlinson Bousfield.
Machinery for making banding - - -	2254	13th Aug. 1870	Thomas Unsworth. Edward Whalley.
Improvements in cord-making and in the apparatus connected therewith. - - - -	2313	22nd Aug 1870	Pierre Motiron. Pierre Huchard. Achille Drouot.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
ROPES, &c.—*continued.*			
Machinery for twisting and laying cords and rope - (*Communicated by Howard Perkins.*)	2572	27th Sept. 1870	John Russell Taber.
Machinery and apparatus for tilling land by steam and for other purposes. (*kempen or wire rope.*)	2904	3rd Nov. 1870	Samuel Oram.
An improved machine for forming strands and "laying up" or "topping up" cordage.	2957	10th Nov. 1870	James Ronald.
For telegraphic cables, *see* "TELEGRAPHS."			
SALT AND SALTPETRE.			
Heating and evaporating of brine in the manufacture of salt. - - - -	2597	30th Sept. 1870	William Hamer. Joseph Davies.
Improvements in the manufacture of salt and in the apparatus employed therein. (*Communicated by J. R. Buchanan.*)	2782	21st Oct. 1870	William Edward Newton.
SEWING AND EMBROIDERING.			
Sewing-machines - - - -	43	5th Jan. 1870	Hiram Plummer.
Sewing-machines - - - -	84	11th Jan. 1870	William Campion.
Feed mechanism for sewing-machines - -	114	13th Jan. 1870	James Lusty.
Feed motion of sewing-machines - -	127	15th Jan. 1870	John Watson.
Machinery or apparatus for ornamenting or embroidering fabrics. - - -	140	17th Jan. 1870	Alfred Robert Gibbons. Anthony Umbach.
Needles and needle arms for sewing-machines - (*Communicated by Mrs. Mary Pemellaia Carpenter.*)	182	20th Jan. 1870	William Robert Lake.
An improved electro-motor for sewing-machines - (*Communicated by Gustave Henry Dervieu.*)	207	22nd Jan. 1870	Alexander Melville Clark.
Construction of sewing-machines - - (*driving mechanism, shuttle, &c.*) (*Communicated by the Grover and Baker Sewing Machine Company.*)	283	31st Jan. 1870	John Henry Johnson.
Motive-power engines and steam generators to be used therewith, suitable for domestic purposes. (*driving sewing-machines.*) (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johnson.
Sewing-machine needles and needle arms - - (*Communicated by George Albert Lloyd.*)	294	1st Feb. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SEWING, &c.—*continued.*			
Sewing-machines to produce overcast and button-hole hems by means of one single needle	413	11th Feb. 1870	Isidor Nasch. Charles Grimme.
Sewing-machines	462	17th Feb. 1870	William Boyle Moore. William Boyle Moore, junior.
Embroidering machinery (*Partly communicated by Johann Ulrich Billwiller.*)	489	18th Feb. 1870	James Lee Norton.
Improvements in combination tools, which improvements are also partly applicable to scissors, pliers and such like instruments. (*for sewing-machine workers.*) (*Communicated by Emile Granier.*)	520	22nd Feb. 1870	Alexander Melville Clark.
Construction and arrangement of mechanism for actuating sewing and other machines worked by a treadle. (*Communicated by Charles Henry Willcox.*)	564	25th Feb. 1870	John Henry Johnson.
Sewing-machines (*Communicated by Charles Lennig.*)	592	28th Feb. 1870	Alfred Vincent Newton.
An improved apparatus for producing rotary motion (*operating sewing-machine.*)	615	2nd March 1870	Charles Ernest de Lorière.
Apparatus for plaiting and sewing linen and other fabrics for shirt-front or other similar purposes.	732	12th March 1870	William Pennington.
An improvement in sewing-machines (*Communicated by John Hadley Osborn.*)	758	15th March 1870	John Campbell McLagan.
Improvements in or applicable to sewing-machines	789	17th March 1870	Thomas Williams.
Machinery for sewing boots and shoes (*Communicated by Charles Goodyear, junior.*)	821	19th March 1870	William Robert Lake.
Machines for sewing straw	846	22nd March 1870	Sidney Stevens Turner.
Sewing-machines	930	30th March 1870	Carl Necker.
An improvement in sewing-machines (*Communicated by Nathaniel Wheeler.*)	960	1st April 1870	Alfred Vincent Newton.
An improved spool for lock-stitch sewing-machines	1222	28th April 1870	William John Blinkhorn.
Apparatus for starting treadle motions applicable to sewing-machines and other purposes. (*Communicated by Orwell Harrison Needham and Charles Newell Brainerd.*)	1226	28th April 1870	Alfred Vincent Newton.
Apparatus for supporting and guiding the work in machines for sewing boots and shoes.	1237	30th April 1870	Daniel Mills.
Sewing-machines	1243	30th April 1870	William Henry Gosling.
Sewing-machines (*Communicated by General Elisha Gaylord Marshall.*)	1383	14th May 1870	William Robert Lake.
An improvement in sewing-machines	1430	18th May 1870	James Starley.
Improvements in rolling metallic rods or wire and in machinery employed for that purpose. (*for sewing-machine needles.*)	1454	19th May 1870	James Partridge Blake.
Sewing-machines (*Communicated by Jean Sabot.*)	1483	23rd May 1870	Henri Adrien Bonnevile

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SEWING, &c.—*continued.*			
Machinery for sewing boots and shoes - - (*Communicated by Charles Goodyear, junior.*)	1491	23rd May 1870	William Robert Lake.
An electro-magnetic motor for sewing and other machines. - - - -	1555	27th May 1870	George Stevens. Joshua Hendy.
Improvements in sewing-machines and in machinery or apparatus for winding the thread on to the spools or bobbins.	1592	1st June 1870	William Winter.
Construction of cabinets, stands or receptacles for sewing-machines. (*Communicated by Messrs. Pollack, Schmidt and Company.*)	1677	9th June 1870	Johannes Heinrich Ludwig Theodor Pörtner.
Sewing-machines - - -	1685	11th June 1870	Thomas Greenwood. John Keats.
An improved embroidering attachment for sewing-machines. (*Communicated by Nathaniel Wheeler.*)	1687	11th June 1870	William Robert Lake.
Sewing-machines - - -	2039	20th July 1870	John Arlidge Mason. John Williams.
Basters for sewing-machines - - - (*Communicated by Franklin Thomas Grimes.*)	2050	20th July 1870	Alfred Vincent Newton.
An improved device for guiding covered wire to be secured upon a fabric or substance in a sewing-machine. (*Communicated by William T. Cook.*)	2124	29th July 1870	Thomas Andrew Vyse, junior.
An improved sewing-machine - - (*Communicated by John Paulding.*)	2166	3rd Aug. 1870	William Robert Lake.
Machinery for sewing boots and shoes - - (*Communicated by Charles Goodyear, junior.*)	2173	4th Aug. 1870	William Robert Lake.
Sewing-machines for producing over-cast and button-hole hems with a single needle. (*Communicated by Isidor Nasch and Charles Grimme.*)	2233	11th Aug. 1870	William Robert Lake.
Sewing-machines - - -	2268	18th Aug. 1870	Arthur Clegg.
Certain improvements in sewing-machines -	2301	20th Aug. 1870	Arthur Isaac Maxfield.
An improved sewing-machine attachment for manufacturing tubing or piping for ornamenting dresses and for other like purposes. (*Communicated by George Henry Collins.*)	2358	27th Aug. 1870	William Robert Lake.
Apparatus to be applied for operating sewing and other machines. (*Communicated by Edward Jenner Leyburn.*)	2381	31st Aug. 1870	Alexander Melville Clark.
An improved tucking gauge and marker applicable for use on sewing-machines generally.	2403	3rd Sept. 1870	Thomas Rogers.
Sharpening and polishing sewing-machine needles (*Communicated by Eduardo E. Blyth.*)	2541	22nd Sept. 1870	David Monroe Childs.
Sewing-machines - - -	2565	26th Sept. 1870	Henry Lomax. Joseph Lomax.
Sewing-machines - - -	2592	29th Sept. 1870	Carl Necker.
Sewing-machines - - -	2593	30th Sept. 1870	Daniel Hanna.
Sewing-machines - - -	2694	12th Oct. 1870	James Henry Smith.
Guiding the material for the construction of button-holes on button-hole sewing-machines.	2738	18th Oct. 1870	Simon Collins.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SEWING, &c.—*continued.*			
Sewing-machines - - -	2740	18th Oct. 1870	Joseph Buchanan Robertson.
An improved arrangement of feed regulator for sewing-machines.	2781	21st Oct. 1870	William Bown.
An improvement applicable to treadles used in working sewing and other machines. (*Communicated by Charles Gordon Patterson.*)	2936	7th Nov. 1870	Alfred Vincent Newton.
Machinery for manufacturing carpet lining - (*Communicated by Joel Fisher Fales.*)	2939	8th Nov. 1870	Alexander Melville Clark.
Improvements in sewing-machines and in tables for sewing-machines. (*Communicated by John Niel Tarbox.*)	2953	9th Nov. 1870	Thomas James Smith.
Sewing-machines - - -	2983	14th Nov. 1870	George Henry Smith.
Sewing-machines - - -	3011	17th Nov. 1870	William Taylor.
Embroidering machines - - - (*Communicated by Henry Rieter and John Wehrli.*)	3177	3rd Dec. 1870	Henry Bernoulli Barlow
Sewing-machines - - - (*Communicated by David Whittemore.*)	3183	3rd Dec. 1870	Edward Thomas Hughes.
Sewing-machines - - - (*and folder.*)	3320	20th Dec. 1870	William Wemyss Kennedy.
Improved treadle mechanism chiefly designed for operating sewing-machines. (*Communicated by George Willey.*)	3375	24th Dec. 1870	George Haseltine.
Sewing-machines - - -	3377	27th Dec. 1870	Michael Heinrich Kernan.
SHEARING SHEEP, CLIPPING HORSES.			
Machinery for shearing and washing sheep or other animals.	394	10th Feb. 1870	John Charles Wilson.
An improved machine or apparatus for clipping horses or other animals.	427	14th Feb. 1870	John Flear.
Shearing and clipping apparatus - -	458	16th Feb. 1870	George Twigg.
Clips or shears for clipping or shearing horses and other animals, which are also applicable for other purposes. (*Communicated by Auguste Lengelée, Leon Boutier and Charles Vincent.*)	506	21st Feb. 1870	Thomas James Smith.
An improved form or construction of knife or cutter, and in the modes of applying the same for the purpose of cutting, mowing, reaping or shearing and such like purposes. - -	3283	15th Dec. 1870	Alexander Charles Bruce. William Scantlebury.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SHIELDS.			
A new shield for military purposes - -	3197	5th Dec. 1870	Arthur Auckland Cochrane.
SHIP AND BOAT BUILDING, SHEATHING, REPAIRING, WORKING, LOADING AND UNLOADING; MASTS, SPARS, &c.			
Construction of ships - - - - (*Communicated by Augustus Robinson Hall.*)	66	8th Jan. 1870	James Hamilton Robinson.
Improved apparatus for diminishing the effects of the oscillation of vessels and for preventing sea sickness. (*Communicated by Lorenzo Dow Newell.*)	157	19th Jan. 1870	Edward Thomas Hughes.
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion.	175	20th Jan. 1870	James Mase Kilner.
Plant or apparatus used for dredging purposes - (*hopper barges.*)	181	20th Jan. 1870	William Simons. Andrew Brown.
Improvements in discharging grain from ships and elsewhere and in the apparatus or means employed therefor.	185	21st Jan. 1870	Matthew Anderson.
Improvements in apparatus and mechanical means for excavating, filling in, transporting and discharging grain, seeds and other materials. (*loading or discharging cargo.*)	212	22nd Jan. 1870	John Holdsworth.
Improvements in the construction of ships or vessels and in bolts and nuts for fastening the parts together, also in the construction and employment of apparatus to be applied to such ships or vessels to assist in steering and propelling them through intricate channels.	237	26th Jan. 1870	Charles Lungley.
Improvements in ships to adapt them to receive sliding keels, and in sliding keels and appliances.	277	31st Jan. 1870	Otto Ernest Pohl.
An improved composition for preventing the fouling of iron and other ships' bottoms, and for preserving metal and other surfaces. - -	370	8th Feb. 1870	William Davison. William Richards.
Improved means or apparatus for controlling and guiding the movements of torpedo boats, rams and other similar vessels. (*Communicated by John Archibald Ballard.*)	382	9th Feb. 1870	Thomas James Smith.
Improvements in the construction of steam vessels and sailing vessels, and in apparatus employed for the better accommodation of passengers on board such vessels and for lessening or preventing sea-sickness.	553	24th Feb. 1870	Henry Bessemer.
Ships' illuminators or scuttles - - -	619	2nd March 1870	William Darley.
Improvements in the mounting, working and pointing of guns and in the construction of the carriages upon which they are mounted.	647	4th March 1870	Robert Anthony Edward Scott.
Sea-going vessels - - - - -	659	5th March 1870	Frank Clarke Hills.
Construction of ships and other vessels - -	674	7th March 1870	Frederic Wilkins.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SHIP-BUILDING, &c.—*continued.*			
Manufacture of armour plates and other heavy forms of malleable iron or steel, or of steel and iron combined.	711	10th March 1870	Joshua Jeavons.
Improvements in the manufacture of bars, plates and sheets of steel, or steel and iron combined, and in the process of welding employed in such manufacture. (*for building vessels for armour plates, &c.*) (*Communicated by John Absterdam.*)	856	23rd March 1870	William Robert Lake.
Improvements in the manufacture of armour plates and in the machinery or apparatus employed in such manufacture. - - - -	869	24th March 1870	Thomas Claridge. Joshua Jeavons.
Improved means for rendering water-tight dock gates, ships' ports or other like openings, also applicable to windows, doors and other like openings.	912	29th March 1870	Robert Saunders.
Improvements in steering gear and in machinery for starting, stopping and reversing heavy steam-engines and turrets, and for discharging cargo.	1018	7th April 1870	Andrew Betts Brown.
Improved machinery applicable for inland navigation (*see* "PROPELLING.") (*Communicated by Murray Jackson.*)	1047	9th April 1870	William Edward Newton.
Improvements in the construction of steam vessels and in the arrangement of wheels for propelling the same. (*Communicated by Ferdinand Kothe.*)	1052	9th April 1870	William Robert Lake.
Compositions for coating ships' bottoms and other like purposes, also applicable to stone and other building materials.	1096	14th April 1870	William Jesty.
Construction of partitions or walls - - (*in ship-building.*)	1106	14th April 1870	Charles Beard.
Improvements in applying electricity or electro-magnetism on board ships in order to prevent incrustation or fouling of their bottoms and the deviation of their compasses, and to produce electric light.	1347	11th May 1870	Charles Weightman Harrison.
Coatings for iron ships - - -	1362	12th May 1870	George Fawcus. George Lunge.
Improvements in the construction of vessels and in the means of propelling the same. (*Communicated by Jean Lucien Arman.*)	1375	13th May 1870	William Edward Newton.
Construction of ships and other navigable vessels -	1404	16th May 1870	Joseph Needham.
Cleansing ships' bottoms - - -	1439	19th May 1870	James Steart.
Ships and vessels - - - - -	1492	23rd May 1870	Trajano Augusto de Carvalho.
An improved setting fid - - -	1534	26th May 1870	Llewellyn Walker. Frederick Alfred Walker.
Improvements in the construction of steam ships and other vessels employed for the conveyance of passengers, and in the means and apparatus employed to prevent or lessen sea-sickness on board such vessels.	1559	27th May 1870	Henry Bessemer.
Improvements in the construction of steam ships employed for the conveyance of passengers, luggage and cattle, and in the apparatus employed for such purpose on board ships, and for lessening or preventing sea-sickness.	1580	30th May 1870	Henry Bessemer.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SHIP-BUILDING, &c. — *continued.*			
Improved arrangements and apparatus applicable to trawlers and other vessels for winding wire warps or metal ropes for deep-sea fishing and other purposes. - - - -	1629	6th June 1870	Samuel Lake. George Kingdon.
An improved metallic paint for preventing the corrosion and fouling of ships' bottoms and other surfaces in water. (*Communicated by James Gamage Tarr and Augustus Henry Wonson.*)	1688	6th June 1870	William Robert Lake.
Form and construction of steam and other ships and floating vessels. - - - -	1684	11th June 1870	John Walker. Adolphe Ernest Ragon.
Improvements in steam and other vessels and in steam-engines, steam-boilers and propellers applicable thereto, parts of which improvements are adapted for other purposes. (*Communicated by James Montgomery.*)	1691	11th June 1870	Benjamin Joseph Barnard Mills.
Improvements in steam vessels and sailing vessels and in the construction and mode of working machinery or apparatus employed on board such vessels for the purpose of lessening the motion of certain parts thereof and for lessening or preventing sea-sickness.	1742	17th June 1870	Henry Bessemer.
Ships and vessels - - - -	1781	22nd June 1870	Juan José Mendez.
Construction of steam and hydraulic rams used in naval warfare.	1796	24th June 1870	William Brown.
Improvements in the manufacture of artificial stone and in articles composed thereof. (*interior decoration of ships.*)	1822	27th June 1870	William Bennet Adamson.
Construction of ships - - -	1837	28th June 1870	Joseph Westwood. Robert Baillie.
Dredging machines - - - - (*for loading or unloading.*)	2087	25th July 1870	Jean Baptiste Ernest Defontaine.
Improvements in drawing and bending sheet metal and in the machinery or apparatus therefor. (*for masts, spars, &c.*)	2257	13th Aug. 1870	James Robertson.
Coating metal sheathing and other surfaces exposed to the action of sea water in order to preserve them and keep them clean.	2318	23rd Aug. 1870	William John Hay.
Life-boats - - - - - (*Communicated by Robert Humble.*)	2498	16th Sept. 1870	William Robert Lake.
Improvements in the construction of ships of war and fortifications, the said improvements being also applicable to garments to be worn by soldiers and sailors in war time.	2606	30th Sept. 1870	John Eiflander.
Machinery and apparatus for transporting passengers, goods and other articles. (*transporting cargo to or from ships.*) (*Communicated by Myles Cooper.*)	2624	3rd Oct. 1870	Leonard Cooper.
A new or improved floating light-house and telegraph and life-boat station.	2625	3rd Oct. 1870	John Benjamin Stoner.
Improvements in and relating to the packing of fibrous or loose materials in ships.	2712	14th Oct. 1870	William Bruce Thompson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SHIP-BUILDING, &c.—*continued.*			
Improved means of and apparatus for preventing the entrance of flies and other insects and reptiles into rooms or apartments of buildings, ships and carriages. (*wire blinds in lieu of glass for ships' cabins.*)	2822	27th Oct. 1870	Sarah Beauchamp Bush.
An improved camp bed which may be used for several various useful purposes. (*or raft.*)	2851	29th Oct. 1870	Auguste Lafage.
Improvements in rivets and in rivetting metal plates together. (*in ship-building.*)	2964	14th Nov. 1870	William Ord.
Improved means for raising and lowering turrets in ships or vessels of war.	2992	15th Nov. 1870	James Shannon.
Vessels and appliances connected therewith for carrying liquid cargoes in bulk. (*Communicated by William Gray Warden.*)	3067	23rd Nov. 1870	John Henry Johnson.
Velocipede carriages and vehicles - - (*water velocipedes.*)	3077	24th Nov. 1870	Sidney Johnson.
A new system for constructing iron ships of war, &c., to be impervious to shot, combined with the true and only method for production and resistance of ram power.	3231	9th Dec. 1870	Edmund Beatty Lockyer
An improved combined hopper and weighing machine for shipping coal and other similar materials.	3236	9th Dec. 1870	John Hopkinson.
Armour-plated ships, forts, fortifications and gun shields.	3300	17th Dec. 1870	John Moore Hyde.
Improvements in boats adapted for the relief of passengers and others from ships foundering at sea and for other uses.	3313	19th Dec. 1870	Benjamin Preston Harris.
Improvements in ships of war and in the working of large guns.	3326	20th Dec. 1870	Frank William Haddan.
Apparatus for raising and lowering the turrets of turret ships.	3370	24th Dec. 1870	John Lawson.

For ships' logs and sounders, *see* "MEASURING PROGRESS."
For ships' pumps, *see* "PUMPS."
For graving docks, *see* "DOCKS."
For rudders, *see* "STEERING."
For anchoring ships, *see* "ANCHORS."
For ventilating ships, *see* "VENTILATION."
For lighting ships, *see* "LAMPS."
For ships' compasses, *see* "COMPASSES."

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SHIPS' BOATS (*Lowering and Disengaging*).			
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion. (*lowering and hoisting boats at sea.*)	175	20th Jan. 1870	James Maze Kilner.
Improved davits for securing boats on ships' decks at sea without lashing.	379	9th Feb. 1870	Robert Punshon.
Apparatus for raising, lowering and detaching ships' boats.	1421	17th May 1870	George Nelson.
Boat-detaching apparatus - - - - (*Communicated by Oliver Trumbull McIntosh.*)	1867	1st July 1870	William Robert Lake.
Locking and releasing hooks - - - (*for lowering ships' boats.*) (*Communicated by John Bozorth and Henry Fredericks.*)	1944	8th July 1870	William Robert Lake.
Improved boat-detaching apparatus - - (*Communicated by Charles Henry Nye.*)	2271	16th Aug. 1870	William Edward Newton.
Apparatus for lowering and disengaging boats -	2947	9th Nov. 1870	Montague Alex.
SHIPS' RIGGING AND SAILS; REEFING AND FURLING SAILS; SHIPS' RIG.			
Attachments to be used with chains, cords, bands, and such like pliable articles, especially useful amongst other purposes for securing on the person trinkets and jewellery. (*or ropes or shipboard.*)	26	4th Jan. 1870	Townshend Griffin.
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion. (*fastening heavy sails to yards.*)	175	20th Jan. 1870	James Maze Kilner.
Improved means or apparatus for reefing and stowing the sails of ships or vessels.	972	2nd April 1870	William Rowden.
Improvements in means and apparatus for seasoning, injecting and preserving wood, part of which improvements is applicable for treating canvass, cordage and other substances to render them impervious to decay.	1041	8th April 1870	John Bennington Blythe.
Mast-head and other hoisting blocks - -	1060	13th April 1870	William Angus.
Fastenings or connections for securing the cables and standing rigging of ships and for other like purposes. (*Communicated by William Carlton Ireland.*)	1764	21st June 1870	William Robert Lake.
Rigging steam and sailing ships - - -	2003	15th July 1870	Thomas Richard Fox.
Bushes of pulley blocks for ships or vessels -	2868	31st Oct. 1870	John Brooks.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SHIRTS, COLLARS, WRISTBANDS, NECK-TIES, SCARFS, DRAWERS, HOSE.			
Means for closing or fastening neckties, stocks and other objects. (*Communicated by Emile Victor Pages.*)	52	6th Jan. 1870	Peter Jensen.
Improvements on buttons and clasps for linen and other garments, likewise applicable for the fixture of any article of toilet to human apparel. (*snap or clasp for neckties.*)	186	21st Jan. 1870	Jules Reichel.
Weaving of seamless articles - - - (*shirts.*)	270	29th Jan. 1870	Samuel Whitehall Mal-loney.
Construction of fasteners for securing together the ends, bands, or parts of made-up scarves, neck-ties, belts, sashes, or other articles of wearing apparel to which such fastenings are applicable.	342	5th Feb. 1870	George Tyler.
Shirt fronts - - - - -	542	24th Feb. 1870	George Asker.
Apparatus for plaiting and sewing linen and other fabrics for shirt fronts or other similar purposes.	732	12th March 1870	William Pennington.
Manufacture of looped fabrics - - - (*stockings, socks, &c.*)	816	19th March 1870	Thomas Keely.
Certain improvements in the construction of paper collars, so far as regards the lining and strengthening thereof.	1031	7th April 1870	Francis Taylor.
Shirt fronts and cuffs - - - - (*Communicated by Effingham Howard Nichols Warner.*)	1158	20th April 1870	Alexander Melville Carr.
An improved spring fastening for securing purses, pocket books, cigar cases and similar articles, and for other like purposes. (*applicable to collars.*) (*Communicated by Mathurin Brouard.*)	1244	30th April 1870	William Robert Lake.
Manufacture or production of gaiters, cuffs, mitts or other similar articles.	1293	5th May 1870	William Thornton.
Shirts - - - - - (*Communicated by Isaac Merritt Singer.*)	1390	14th May 1870	Bristow Hunt.
Machines for and the manufacture of knitted goods (*sleeves or legs of garments.*)	1428	18th May 1870	David McColley Weston.
Fastenings for elastic stockings, stays, corsets, bandages and other articles of dress or wearing apparel.	1820	27th June 1870	John George Henry Hill.
Improved manufacture of trimmings, edgings, ruchings, plaiting and other similar goods. (*for ties.*)	2300	20th Aug. 1870	Hesketh Hughes.
Improvements in the manufacture of wearing apparel, such as coats, vests, trousers, jackets, shirts, drawers and other similar articles.	2431	8th Sept. 1870	Mathew Lawson.
Bows, scarfs and similar articles to be worn with collars. (*Communicated by Elizabeth H. Clarke.*)	2662	7th Oct. 1870	George Haseltine.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SHIRTS, &c.—*continued.*			
Shirt collars	3035	19th Nov. 1870	George Matthew Felton.
Certain improvements in shirts	3052	22nd Nov. 1870	William Gardner. James Russell.
Shirts	3149	1st Dec. 1870	Peter McIntyre.
SHOT, SHELL, BULLETS AND OTHER PROJECTILES.			
Improvements in the manufacture of shot and in apparatus employed therein.	134	15th Jan. 1870	Gerhard Lampen.
An improved toy air-gun and projectile for the same. (*Communicated by Henry Josiah Griswold.*)	192	21st Jan. 1870	William Robert Lake.
Subdividing particles of water and other fluids and applying the same to sanitary and other purposes. (*for charging air in shot towers with moisture.*)	596	1st March 1870	Marmaduke Wilkin. John Clark.
Apparatus for running or pouring metals and for moulding and forming the same. (*casting bullets.*)	809	18th March 1870	James Murdoch Napier.
Guns and projectiles therefor	1092	14th April 1870	Addington Taylor.
Projectiles (*Communicated by Abiatha Fales Potter.*)	1360	12th May 1870	John Henry Johnson.
Rocket projectiles for purposes of war	1460	20th May 1870	Addington Taylor.
Improvements in fire-arms and ordnance and in rifled projectiles and machinery for the manufacture of the same.	1745	17th June 1870	Sir Joseph Whitworth.
Explosive projectiles and fuses (*Communicated by Eugene Pertuiset.*)	2066	21st July 1870	John Henry Johnson.
Improvements in rifled small arms and ordnance, in tools or apparatus for rifling the same, and in projectiles for the said ordnance.	2282	18th Aug. 1870	William Hastings Sim.
Improvements in fire-arms and in projectiles to be used therewith.	2317	23rd Aug. 1870	Charles Weightman Harrison.
Fixed ammunition for fire-arms and tools for the manufacture of the same. (*shot-cases.*)	2611	1st Oct. 1870	Timothy James Powers.
Ordnance and projectiles therefor	2707	13th Oct. 1870	Henry Huthnance.
Improvements in making moulds for casting and in apparatus therefor. (*shell and shot.*)	2977	12th Nov. 1870	John Page.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SHOT, &c.—*continued.*			
Improvements in the manufacture of iron and steel and castings of the same, and in apparatus employed therefor. (*exploding torpedoes.*) (*Communicated by John Ware Middleton.*)	3067	24th Nov. 1870	George Haseltine.
Improvements in the construction of ordnance and in the mode of propelling projectiles, and also in the cartridges and ammunition used for that purpose.	3130	29th Nov. 1870	Henry Bessemer.
SHOW-CASES, EXHIBITING GOODS FOR SALE, SHOP SAFES, FRONTS AND COUNTERS; NAME PLATES, STREET NAME INDICATORS.			
Cases or apparatus for transmitting and exhibiting cut flowers.	110	13th Jan. 1870	William Floyd Chapman.
An improved means or method of exhibiting names, photographs, views, designs or sketches in monuments, door or other knobs, boxes, walking sticks, umbrellas and various other articles. - - - -	112	13th Jan. 1870	Joseph Wright. Joseph Cryer. Edwin Rhodes.
Improvements in the manufacture of tablets, facias, signs and similar articles, and in the means of producing names, numerals, inscriptions and devices for ornament, advertisement, illumination and other similar purposes. -	223	25th Jan. 1870	Joseph Skertchly. Ambrose Maude Hunt.
An illuminated rotary advertising apparatus - - (*or for exhibiting articles for sale.*)	378	9th Feb. 1870	Joseph Haley.
Methods of manufactures and combinations therewith of processes for producing pictorial, ornamental and other designs and devices. (*for show tablets, show cards, &c.*)	600	1st March 1870	Benjamin George George.
Constructing and fitting brackets for shop windows and other purposes. (*for show-cases.*	974	2nd April 1870	John Richard Cadman.
Signals and name plates to be used in connection with letter boxes.	1001	6th April 1870	Ellis Lever.
Manufacture of hackney carriage and other lamps, tablets and similar articles for the purposes of exhibiting advertisements.	1057	11th April 1870	William Higgins.
Improved means of protecting shop fronts, windows, doors and other parts of buildings and other parts of buildings or structures.	1648	7th June 1870	Frederick Schäfer.
Improvements in wardrobes, which improvements are applicable to other articles of furniture and to the fitting of show and such like rooms.	1759	21st June 1870	William Rainford.
Manufacture of show tablets - - -	2143	1st Aug. 1870	William Brownlie.
An improved mode of and apparatus for advertising and distributing business cards and circulars.	2659	7th Oct. 1870	William Elbert Dando.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SHOW-CASES, &c.—*continued.*			
An improved automatic apparatus to be employed in vending or selling small articles.	2828	27th Oct. 1870	John Gamgee.
Improvements in mechanism for giving a slow rotatory motion to the bottoms of ovens, to frames or supports for exhibiting articles in shop windows and for other like purposes, and in frames or supports to be actuated by the said mechanism.	2835	27th Oct. 1870	Alfred Bennett.
Advertising and apparatus connected therewith (*displaying sign boards, &c.*)	2944	8th Nov. 1870	Henry Cyrus Symons.
Manufacture of street and carriage indicators	2955	10th Nov. 1870	William Higgins, junior.
An improvement in boxes for containing furs	2956	10th Nov. 1870	Thomas Henry Simmonds.
Safes or receptacles designed to serve as coal boxes, as show-cases for shops, and for other like purposes. (*Communicated by Benjamin Richard Deacon.*)	3016	17th Nov. 1870	George Haseltine.
An improved means of advertising, which improvement is also applicable in communicating information for other purposes. (*exhibiting music, &c.*)	3078	24th Nov. 1870	William Nunn.
SIFTING, SORTING, SEPARATING, SPRINKLING.			
A new or improved riddle specially adapted for cleansing and assorting potatoes.	316	3rd Feb. 1870	James Davenport, senior.
Improved machinery for bolting or sifting flour or meal and separating the heavier from the lighter particles. (*Communicated by Louis Theodore Hippolyte Loron.*)	416	11th Feb. 1870	William Edward Newton.
An improved method or means of ornamenting woollen, calico and seal-skin cloths. (*sprinkling coloring matters.*)	469	17th Feb. 1870	John Walmsley. Thomas Roberts.
Apparatus for lifting potatoes and other roots (*and soil riddler.*)	560	25th Feb. 1870	George Hey Harrison.
Subdividing particles of water and other fluids, and applying the same to sanitary and other purposes. (*forming spray.*)	596	1st March 1870	Marmaduke Wilkin. John Clark. Adam Scott.
Apparatus applicable to the treatment of towns' and domestic refuse for sanitary purposes. (*combining a cinder sifter with a dry commode or closet.*)	630	3rd March 1870	James Conyers Morrell.
Machinery for dressing or sifting ground wheat or other grain. (*Communicated by Messieurs Nagel and Kæmp.*)	649	5th March 1870	Julius Allmann.
Improved apparatus for injecting and reducing liquids to a state of spray or minute subdivision. (*Communicated by Alcide Sanial du Fay.*)	673	7th March 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SIFTING, &c.—*continued.*			
Rotary corn screens for dressing and separating grain.	776	16th March 1870	William Rainforth, sen. William Rainforth, jun.
A new or improved apparatus for damping woven fabrics. (*producing spray.*) (*Communicated by Emile Welter.*)	792	17th March 1870	William Edward Gedge.
An improved sieve for gas purifiers and scrubbers	836	21st March 1870	George Skey. Thomas Proud.
Apparatus for facilitating the sorting of wool	886	25th March 1870	William Ramsden. John Charles Pearce. Robert Ayrey.
Apparatus for washing and treating pulps (*using a series of sieves of wire gauze.*) (*Communicated by Louis Joseph Amedée Lespermont.*)	994	5th April 1870	Alexander Melville Clark.
Machinery for hulling cotton seeds and separating their kernels from the hulls and fibres.	1175	22nd April 1870	Henry Shaw.
Machinery or apparatus for separating and sorting cotton or other fibrous substances.	1195	25th April 1870	John Lord. Jonathan Gresty. Christopher Cross.
Apparatus for cleaning grain and seeds (*separating impurities.*) (*Communicated by Frederic Wegmann.*)	1287	5th May 1870	Alfred Vincent Newton.
An improved method of and apparatus for separating aqueous from oleaginous substances.	1845	28th June 1870	Henry Medlock.
Improved machinery or apparatus for separating matches so that they can be dipped in the phosphoric paste without adhering to one another.	2089	25th July 1870	Ottmar Walch.
Apparatus for separating, cleaning, classifying coal, ore, grain and other solid substances.	2187	6th Aug. 1870	George William Hick.
Manufacture of twisted metal bars to form augers and drills, and an improved composite machine for twisting such augers and drills and for cutting screws. (*producing spray.*) (*Communicated by Jean Boulay.*)	2220	10th Aug. 1870	Martin Macdermott. Arthur David Williams.
An improved screen-wire for dressing wheat and other grain, which web is also applicable to dressing sieves generally, and for the floors of malt and other drying kilns.	2429	8th Sept. 1870	William Silcock.
An improved method of separating materials of different specific gravity.	2504	17th Sept. 1870	Ferdinand Kohn.
Improvements in centrifugal machines, in the suspension and driving of the same, and a new or improved combination thereof with other apparatus. (*for separating substances.*)	2550	23rd Sept. 1870	David McColley Weston.
Machinery and arrangement for separating mixed substances or materials of different specific gravities.	2594	30th Sept. 1870	Henry Clifton Carver.
Machinery and apparatus for breaking nuts and separating the husks and shells from the kernels.	2741	18th Oct. 1870	William Mather.
A portable apparatus for turning, airing and screening wheat and other grain, which machine is particularly applicable for the removal of dust and weevils.	2958	10th Nov. 1870	William Henry Gittins.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SIFTING, &c.—*continued.*			
Screens more especially applicable for screening mineral phosphates.	3041	21st Nov. 1870	Edward Tonybee.
Combined winnowing, screening and blowing machines.	3066	23rd Nov. 1870	John Baker.
Machinery or apparatus for "dewing" woollen or other woven or felted fabrics.	3122	29th Nov. 1870	Joseph Bottomley. William Bottomley, the younger.
Improvements in separating seeds and ground or pulverised substances, and in the apparatus or means employed therefor.	3258	13th Dec. 1870	William Walker Gibson.
Furnaces (*use of sieves to distribute powdered fuel.*)	3328	20th Dec. 1870	Jacob Geoghegan Willans.
SIGNALS, ALARMS, COMMUNICATING APPARATUS; CONVEYING SOUNDS.			
Machinery or apparatus for working signals and switches on railways.	12	3rd Jan. 1870	Harry Herbert Cochrane.
A new or improved apparatus to signal trains in foggy weather, with self-acting apparatus to communicate and indicate intelligence to pointsman's cabin or other places.	31	4th Jan. 1870	Charles Henry Lea.
Improvements in the preparation of combustible liquids for illuminating purposes, and in lamps for burning such or other combustible liquids. (*for railway signals.*)	63	7th Jan. 1870	George Grainger Tandy. John Andrews Dryden. William Perkins.
Apparatus for effecting communication between the different parts of a railway train in motion.	118	14th Jan. 1870	James Leetch.
Application of inextinguishable signal lights for marine and other purposes. (*railway danger signals.*) (*Partly communicated by Ferdinand Silas.*)	301	2nd Feb. 1870	Nathaniel John Holmes.
Improved mechanical arrangements to be adapted to the rails of lines of railways, and used in combination with fixed railway signals for preventing such signals being passed in dark or foggy weather or otherwise without the knowledge of the engine driver or guard in charge of the train.	381	9th Feb. 1870	Frederic Prince, the younger.
Apparatus for lighting, applicable also for signalling purposes. (*Communicated by Auguste Prosper Berlioz.*)	474	17th Feb. 1870	John Henry Johnson.
Hand signal and other lamps	483	18th Feb. 1870	Samuel Wilson Clark. William Robert Sykes.
An improved alarm apparatus (*Communicated by Eugene Victor Achille Loiseau.*)	537	23rd Feb. 1870	William Robert Lake.
Apparatus for working and locking or securing railway points and signals.	569	25th Feb. 1870	John Saxby. John Stenson Farmer.
Apparatus for communicating between the guards, drivers and passengers of railway trains.	572	26th Feb. 1870	John McElroy. Charles Kearsley.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SIGNALS, &c.—*continued.*			
Indicators for steam-boilers - - -	585	28th Feb. 1870	John Wakefield. Joseph Kendall.
Apparatus for giving alarm when the water in steam-boilers is below the proper level.	595	1st March 1870	John Parkinson.
Communication between passengers, guard and engine driver or either of them.	625	3rd March 1870	John Bowrah.
Boiler fittings - - - - - - (*whistle or alarm apparatus.*)	634	3rd March 1870	William Henry Bailey.
Improved apparatus for indicating a deficiency of water in steam-boilers, and for regulating the supply of water thereto. (*Communicated by Rufus Nutting Pratt and Robert Berryman, and Francis A. Pratt and Samuel Coit.*)	744	14th March 1870	William Robert Lake.
An improved apparatus for working points and signals on railways. - - - - -	746	14th March 1870	James John Stevens. James John Frederick Stevens. Warwick Alan Stevens.
Self-acting signals for railways - - -	822	19th March 1870	Benjamin Wade.
Improvements in locomotion and in the means to be employed therein. (*use of stop valves for signalling.*) (*Communicated by Nicolas Joly.*)	847	22nd March 1870	John Henry Johnson.
A new or improved distance signal alarum for railways.	934	31st March 1870	Edward Funnell.
Apparatus for working and locking railway switches and signals.	971	2nd April 1870	William Smith.
Signals and name plates to be used in connection with letter boxes.	1001	6th April 1870	Ellis Lever.
Means of communicating between the passengers and guard upon railway trains.	1004	6th April 1870	Thomas Horridge.
Portable apparatus for manufacturing gas (*for signals.*) -	1144	19th April 1870	George Symes. James William Young.
Machinery for knitting stockings or various other articles. (*alarm apparatus.*) (*Partly communicated by George M. Patten.*)	1171	22nd pril 1870	James Rand Clark.
Ships' and other signal lamps - - -	1253	2nd May 1870	William Nunn.
An improved combined self-closing stopper and whistle for the mouth pieces of speaking tubes, which stopper may also be adapted to bottles and other vessels, and to cocks, taps and other articles for regulating the flow of liquids.	1258	2nd May 1870	James Leetch.
Improved means of communicating between the passengers, guard and engine driver upon railways. - - - - -	1264	3rd May 1870	Thomas Bradbury. Joseph Bamford.
Mode of and apparatus for working railway signals	1268	3rd May 1870	William Henry Preece. William Edward Langdon.
Improvements in apparatus for preventing railway carriages running off the line, in wheels for enabling them to pass round curves, in operating points or switches automatically, and in securing rails to chairs or supports.	1269	3rd May 1870	John Tiranoff.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SIGNALS, &c.—*continued.*			
Apparatus for recording electric telegraph signals	1301	6th May 1870	Warren Thompson.
Construction of hand signal lamps	1343	11th May 1870	James Howard.
Apparatus for signalling between passengers, guards and drivers of trains.	1374	13th May 1870	James Anthony Gardner.
Safety attachments for steam generators (*Communicated by Hiram Kimball.*)	1549	27th May 1870	Benjamin Joseph Barnard Mills.
Apparatus for communicating on railway trains	1762	21st June 1870	George Atterbury. George Whitehouse.
Candles (*for ships' lanterns.*) (*Communicated by Francois Alfred Chatel.*)	1831	27th June 1870	William Robert Lake.
Improvements in telegraphy and in apparatus to be used therefor.	1855	30th June 1870	Augusto Guattari.
Mast-head lights, lanterns or lamps	1868	1st July 1870	James Hosken.
Apparatus for working railway switches and signals	2218	10th Aug. 1870	John Mortimer Heppel.
Railway locking apparatus for switches and signals	2305	20th Aug. 1870	Richard Christopher Rapier.
Mechanical telegraphs and liquid to be used therewith, which fluid is also applicable as a power transmitter for other purposes, for the making of liquid joints and other purposes where it is desirable to use a liquid that does not readily congeal or evaporate.	2384	1st Sept. 1870	Charles Henry Chadburn. William Chadburn.
An improved recording pressure-gauge and alarm apparatus. (*Communicated by Marmont B. Edson.*)	2411	3rd Sept. 1870	George Haseltine.
Letter boxes and bags for receiving and containing letters. (*application of alarm bell or gong.*)	2448	10th Sept. 1870	Henry Tristram. Edward Greene Leeman.
Machinery or apparatus for working and interlocking railway switches, tongues or moveable points and signals.	2586	29th Sept. 1870	John Brunton. Richard Christopher Rapier.
Portable apparatus for manufacturing gas (*for signals.*)	2591	29th Sept. 1870	George Symes.
Signals and signalling (*Communicated by James Gordon.*)	2602	30th Sept. 1870	Thomas Foulkes.
Improvements on electro-dynamic apparatus for keeping off thieves.	2645	6th Oct. 1870	Dr. Otto Burg. August Schiebel.
Safes, strong rooms and apparatus for the protection of valuable property. (*sounding an alarm.*)	2654	6th Oct. 1870	Samuel Chatwood. Thomas William Tobin.
"Low water alarms" for steam generators or water heaters.	2821	27th Oct. 1870	Robert Lees.
Improvements in fog or alarm signals and in apparatus for attaching fog or alarm signals to the rails of railways.	2834	27th Oct. 1870	Harry Boughton.
Telegraphic printing apparatus	2845	28th Oct. 1870	Richard Herring. Robert Alexander Novare.
Improvements applicable to safes, vaults and other structures for containing valuable property, and in alarm apparatus or telegraphs connected therewith. (*Communicated by Edwin Holmes and Henry Clay Roome.*)	2876	1st Nov. 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SIGNALS, &c.—*continued.*			
Apparatus for working "railway signals" -	3030	19th Nov. 1870	Charles Axon.
Ship signals - - - - (*Communicated by Augusto Guattari.*)	3040	21st Nov. 1870	Vital de Tivoli.
Hydro-carbon lighting apparatus, chiefly designed for locomotives and signals. (*Communicated by Myron Hopkins Strong, Thomas Barbour, Charles Cunningham Connor and Robert Barbour.*)	3061	23rd Nov. 1870	William Robert Lake.
Railway carriage lamps and other lamps - - (*signal lamps.*)	3082	24th Nov. 1870	Eli Henry Griffiths.
An automatic ventilator, alarm and pump for vessels. (*Communicated by William Fitz James Thiers, P. D. Rodney and Edward Parkman.*)	3117	28th Nov. 1870	Benjamin Joseph Barnard Mills.
Machinery or apparatus for locking or controlling the hand levers of railway points and signals.	3124	29th Nov. 1870	William Buck.
An improved alarum for public or private buildings, bankers' strong rooms, safes and other depositories intended to contain valuable property and documents.	3136	30th Nov. 1870	Charles Heirons.
Apparatus for giving danger and other signals and for delivering mail bags and parcels to and from railway engines and trains in motion.	3153	1st Dec. 1870	Thomas Lawrence M'Cready.
Signalling on railways - - -	3203	6th Dec. 1870	Henry Arthur Dibbin.
Railway signals - - - -	3211	6th Dec. 1870	William Chamberlin.
Improved apparatus for signalling on railways -	3222	8th Dec. 1870	William Thomas Cassel Pratt.
Improved means of signalling on railways -	3232	9th Dec. 1870	Nathan Ager. William Percival Pickering.
Railway signals - - - -	3240	10th Dec. 1870	John Musgrave.
Magnetic and electric telegraph apparatus - (*and signal apparatus.*)	3245	10th Dec. 1870	Geminiano Zanni.
Means of effecting communications by means of a code or codes of signals between different points either at sea or on land or between vessels at sea and points on land.	3265	13th Dec. 1870	James Stewart Smyth.
Improvements in fog or danger signals and in a novel method of laying the same in position and in removing the same when exploded or not used.	3301	17th Dec. 1870	Edward Keirby.
Railway signals - - - -	3322	20th Dec. 1870	John Hargrave.
Improvements in hydraulic breaks for railway rolling stock, partly applicable to the supplying of the tender or feed tank with water. (*may be used as signals.*)	3395	30th Dec. 1870	George Pearson Renshaw.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SIZING, WARPING, BEAMING AND PREPARING YARNS FOR WEAVING.			
Certain improvements in sizing machines	37	5th Jan. 1870	William Scowcroft Lowe.
Machines for sizing yarn (*Communicated by William Lancaster.*)	145	18th Jan. 1870	Henry Bernoulli Barlow.
An improvement in the manufacture of quilts, counterpanes, table or toilet covers and other similar fabrics. (*drawing in.*)	359	8th Feb. 1870	Henry Bond. Joseph Riley.
Improvements in the manufacture of size, and in the application of a certain material for conditioning cotton and other fibrous substances.	375	9th Feb. 1870	Christopher Crossley. Robert Whipp. Thomas Crossley.
Improvements in machinery or apparatus for washing or scouring and drying wool and other fibrous materials and yarns or threads. (*drying warps.*)	386	9th Feb. 1870	John Petrie, junior.
Machinery or apparatus for dressing warps of wool or other fibrous substances and twine.	392	10th Feb. 1870	William Houghton. John Bapty.
Machinery or apparatus for drying woven fabrics and yarns or threads, and for "ageing" woven fabrics. (*after sizing.*)	527	23rd Feb. 1870	James Farmer.
Warping or beaming and sizing machines	555	25th Feb. 1870	John Bullough.
Tape dressing machines	611	2nd March 1870	William Scowcroft Lowe.
Improvements in the treatment or preparation of yarns for weaving, and in machinery or apparatus connected therewith.	656	5th March 1870	Samuel Howard Stott.
Sizing machines	764	15th March 1870	Edward Dugdale. Joseph Dugdale.
Looms for weaving, partly applicable to beaming machines.	772	16th March 1870	Richard Tonge.
Manufacture of size (*for dressing fibrous substances.*)	1020	7th April 1870	Christopher Crossley. Robert Whipp. Thomas Crossley.
Tape-dressing or sizing machines	1308	7th May 1870	William Scowcroft Lowe.
Sizing machines	1310	7th May 1870	John Bullough.
An improved means or method of beaming warps or supplying warp in the weaving of fabrics, for which some of the warp threads require to be of a different tension to the others.	1399	16th May 1870	Richard Longden Hattersley.
Machinery or apparatus for washing and drying wool, yarn and other fibrous materials. (*or sizing warps.*)	1511	25th May 1870	John McNaught. William McNaught.
Tape-dressing or sizing machines	1526	26th May 1870	John Bullough.
Machinery or apparatus employed in the process of bleaching, scouring, dyeing and sizing warps or yarns and fabrics.	1548	27th May 1870	John Dargue. William Dargue.
Certain improvements in machinery or apparatus used in sizing and dressing yarn.	1575	30th May 1870	Colin Mather.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SIZING, &c.—*continued.*			
An improved stop motion applicable to machinery or apparatus employed in bleaching, scouring, dyeing, sizing and dressing warps, yarns and fabrics, also in carding and combing wool or other fibrous substances.	1654	8th June 1870	William Dewhirst. Thomas Dewhirst. Joseph Dewhirst.
Slasher sizing machines (*Communicated by Daniel Hussey and Frederick Allen Leigh.*)	1767	21st June 1870	John Bullough.
Certain improvements in the preparation of "cops" and "healds" employed in the manufacture of woven fabrics. (*applying size to cop tips.*)	1785	23rd June 1870	Thomas Richmond. Christopher Catlow.
Improvements in sizing machines and in the method of sizing yarns.	2461	12th Sept. 1870	John Lancaster.
An improved apparatus for damping textile threads or yarns in the processes of spinning, winding, reeling and warping or other similar processes.	2623	3rd Oct. 1870	Edmund Leach.
Dressing or sizing warp threads or yarns of wool, cotton, and other fibrous materials. (*Communicated by Louis Schönherr.*)	2693	12th Oct. 1870	Edward Thomas Hughes.
Machinery or apparatus for washing, opening and drying wool and other fibrous materials and washing yarns. (*sizing warps and yarns in the hank.*)	2772	21st Oct. 1870	John McNaught. William McNaught, jun.
Improvements in dressing yarns or warps, and in the mechanism or apparatus employed therefor. (*Communicated by John Hutcheson.*)	3111	26th Nov. 1870	Saint John Vincent Day.
Certain improvements in self-stopping beam warping machines.	3270	14th Dec. 1870	William Henry Hacking.
Improved compositions for sizing, dressing and finishing threads, yarns, textile fabrics and paper.	3273	14th Dec. 1870	Elijah Slack.
SMOKE PREVENTION; BURNING AND CONDENSING SMOKE; SAVING FUEL.			
An improved gas stove, part of which is also applicable to blow pipes and forges.	15	3rd Jan. 1870	Thomas Charles Olney.
An improved apparatus or means to be employed for the purpose of heating churches, chapels and other buildings. (*economizing fuel.*)	40	5th Jan. 1870	Richard Rundle. Thomas Parker.
Furnaces (*with smoke and gas burners.*)	74	10th Jan. 1870	Walter Watson Hughes.
Steam-boiler and other furnaces	117	13th Jan. 1870	William Thornley. Samuel Spencer. Joseph Wright.
Apparatus for the prevention of smoke in steam-boiler and other furnaces.	136	17th Jan. 1870	Thomas Taylor.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SMOKE, &c.—*continued.*			
An improvement in or addition to ordinary fire-grates.	156	19th Jan. 1870	William Frederick Padwick.
Construction and application of hot-water boilers, joints and valves. (*saving fuel.*)	256	28th Jan. 1870	Alfred William George Weeks. George Deal. George Lillywhite. Alexander Oliver Launders.
Improvements applicable to steam-boiler and other furnaces. (*securing more perfect combustion.*)	292	1st Feb. 1870	Joshua Fisher. Henry Fisher.
Apparatus for the treatment of argentiferous leads (*economising fuel.*)	349	7th Feb. 1870	Gustave Dumont.
Improvements in fire-places for generating steam and in other furnaces where great heat is required. (*economizing fuel, consuming smoke.*)	387	9th Feb. 1870	John Martin Stanley. William Atkins.
An improved method of consuming smoke and economising fuel in steam-boiler and other furnaces.	421	12th Feb. 1870	John Botterill. John Botterill, the younger.
Gas stoves (*consuming smoke.*)	422	12th Feb. 1870	James Morrison.
Glass and other furnaces	460	16th Feb. 1870	John Dawson. Nathaniel Grace Lambert.
Construction of furnaces to effect consumption of smoke and saving of fuel.	490	19th Feb. 1870	George Jones.
Steam-boilers and engines (*effecting economy of fuel.*) (*Communicated by Francis Brown Blanchard.*)	549	24th Feb. 1870	William Edward Newton.
Construction of furnaces for steam-boilers (*preventing smoke.*)	561	25th Feb. 1870	Samuel Moorhouse.
Machinery for propelling vessels and aërial machines by reaction, parts of which are applicable to forcing fluids for other purposes.	623	3rd March 1870	Richard Boyman Boyman.
Improvements in the mounting, working and pointing of guns, and in the construction of the carriages upon which they are mounted. (*carrying off the smoke.*)	647	4th March 1870	Robert Anthony Edward Scott.
Apparatus for burning and consuming smoke	657	5th March 1870	Edwin Bray. John Crosby Hargreaves. Francis Henry Stubbs.
Improvements in the application of power for the propulsion of vehicles on common roads or railways, and in apparatus connected therewith. (*economising fuel.*) (*Communicated by Henri Adolphe Corbin.*)	664	5th March 1870	Alexander Melville Clark.
Improved apparatus for generating steam or elastic vapours for actuating motive-power engines. (*economy of fuel.*) (*Communicated by Jean Baptiste Givord.*)	691	8th March 1870	William Edward Newton.
An improved arrangement of furnace and boiler for the generation of steam. (*saving fuel and preventing smoke.*)	692	9th March 1870	Joseph Hopkinson.
Improvements in or applicable to steam-boiler and other furnaces for promoting the consumption of smoke.	704	10th March 1870	Robert Blakeborough. Solomon Sanderson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SMOKE, &c.—*continued.*			
Improvements in steam-boilers and in apparatus for generating steam. (*saving fuel.*)	804	18th March 1870	William West.
Limekilns - - - - - (*economising fuel.*) (*Communicated by Pierre Jacques Gerbault-Guichard.*)	808	18th March 1870	Henry Edward Newton.
Steam-boilers or generators - - - (*economising fuel.*)	868	24th March 1870	Edwin Cambridge.
Means of and apparatus for consuming smoke -	910	29th March 1870	Richard Guest Rainforth.
Apparatus for removing soot and other deposit from the tubes of steam-boilers.	999	5th April 1870	Edward Green.
Steam-boiler furnaces for economizing fuel and consuming smoke. - - - - -	1002	6th April 1870	John McNaught. William McNaught, jun.
Certain improvements in steam and other elastic fluid engines. (*economising fuel.*)	1063	12th April 1870	Robert Wilson.
Improvements applicable to fire-places, stoves and grates, for ensuring safety against fire and the prevention of smoky chimneys.	1067	12th April 1870	Lewis William Thomas.
Construction of multitubular steam-boilers - (*Communicated by Georg Friedrich Udelhoven.*)	1207	26th April 1870	Alexander Browne.
Means of and apparatus for generating and heating steam in steam-boilers and other vessels, and for heating the liquid contents thereof. (*aiding combustion.*)	1245	30th April 1870	Owen Murrell.
Apparatus or arrangements to be used in connection with retorts for the manufacture of gas. - (*drawing smoke from gas retorts.*)	1274	4th May 1870	William Woodward. Adam Woodward, junior.
Apparatus or arrangements for preventing or reducing the production of smoke in furnaces.	1299	6th May 1870	David Walker.
New perforated fire-bars applicable to locomotive and steam boilers. (*saving fuel.*)	1337	11th May 1870	Frederick Broughton.
Improvements in furnaces and in apparatus connected therewith. (*saving fuel and preventing smoke.*)	1406	16th May 1870	Dillwyn Smith.
Retorts and retort settings - - -	1410	17th May 1870	Charles Hunt.
Improvements in the treatment and recovery of metallurgical products and in the means and apparatus employed therein. (*condensing fumes, filtering.*)	1536	26th May 1870	Julian Bernard.
Grate bars and other parts of steam-boiler and other furnaces.	1636	6th June 1870	Thomas Lishman.
Steam-boiler and other furnaces, fire-bars and flues. - - - - -	1651	8th June 1870	George Lodge. George Sheard.
Construction of furnaces for the manufacture of iron and steel. (*saving fuel.*)	1723	16th June 1870	Josiah Swain.
Bridges of the furnaces of steam-boilers or generators, or of other furnaces. - - (*lessening formation of smoke.*)	1772	22nd June 1870	Isaac Bates. John Taylor.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SMOKE, &c.—*continued.*			
Improvements applicable to the furnaces of steam-boilers.	1964	30th June 1870	Charles Neale May.
An improved method of absorbing sulphurous fumes or sulphurous acid and obtaining thereby useful products.	1992	4th July 1870	Michael Cahen.
Construction of screw propellers used in steam ships. (*economising fuel.*)	1991	14th July 1870	William Brown.
Fire-bars and grates - - - - - (*saving fuel.*) (*Communicated by Ernest Mehl.*)	1995	14th July 1870	Alfred Wenner.
Apparatus for condensing metallic and other fumes, gases and smoke.	2074	23rd July 1870	William James Johnson.
Smoke-preventing apparatus - - -	2379	31st Aug. 1870	Otto Gjerdrum.
Improvements in distilling mineral oils and in apparatus therefor. (*saving fuel.*)	2435	8th Sept. 1870	Edmund Richard Southby.
Construction of fire-bars and for the employment of them for heating the feed for generating steam, and for keeping the bars cool. (*saving fuel.*)	2459	12th Sept. 1870	Charles Stephens.
Blast furnaces - - - - - - (*saving fuel.*)	2551	23rd Sept. 1870	Andrew Barclay.
Steam-boiler and other furnaces and stoves - (*improving combustion.*)	2557	23rd Sept. 1870	John Tatem Rich.
Means of and apparatus for consuming smoke -	2589	29th Sept. 1870	Richard Guest Rainforth.
Heating and evaporating of brine in the manufacture of salt. - - - - - - (*reducing fuel.*)	2597	30th Sept. 1870	William Hamer. Joseph Davies.
New or improved modes of and means or apparatus for utilising the power and heat of the steam used in motive-power engines and for other purposes. (*saving fuel.*) (*Communicated by Treat Timothy Prosser.*)	2606	1st Oct. 1870	William Richard Middlemore Thomson.
Apparatus for ventilating stoke holes and engine rooms of steam ships. - - - (*and saving fuel.*)	2643	5th Oct. 1870	William Rudd Oswald. George Hough.
Improvements in condensing and cooling the smoke and products of combustion arising from steam boiler and other furnaces and in the apparatus employed therein.	2670	8th Oct. 1870	Alfred Stansfield Rake.
Steam-engines - - - - - - (*economising fuel.*) (*Communicated by John Houpt.*)	2678	10th Oct. 1870	William Robert Lake.
Construction of cupola furnaces - - (*economising fuel.*)	2686	11th Oct. 1870	Peter Newland.
Certain improvements in the mode of and apparatus for charring wood, vegetable and animal mat (*economising fuel.*)	2714	14th Oct. 1870	Frederick Ludewig Hahn

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SMOKE, &c.—*continued.*			
Construction of furnaces for burning coals or other combustibles. (*and smoke consumer.*)	2717	14th Oct. 1870	John Jordan.
Production of motive-power and appliances connected therewith. (*economising fuel.*)	2729	17th Oct. 1870	George Bell Galloway. George Thomas Galloway.
An improved automatically-rotating instrument applicable as a toy, and for the diffusion of gases of combustion.	2754	19th Oct. 1870	Robert William Fraser.
Improvements in the manufacture of salt and in the apparatus employed therein. (*saving fuel.*) (*Communicated by J. R. Buchanan.*)	2782	21st Oct. 1870	William Edward Newton.
Improved methods of and apparatus for utilising the waste and spare or live steam, waste and spare heat, and waste and spare momentum of locomotive and other steam-engines.	2906	3rd Nov. 1870	Thomas Arthur Dillon.
Construction and working of furnaces, baker's oven, fire-places, stoves and stove grates for the purpose of igniting and consuming smoke.	2922	5th Nov. 1870	William Henry Tooth.
Improvements in or connected with furnaces for boilers, evaporating vessels and stills. (*economising fuel.*)	2949	9th Nov. 1870	Nedrick Jarvie. William Miller. William Calderwood.
Construction of crucibles or pots used in the manufacture of glass and other materials. (*saving fuel.*)	2966	11th Nov. 1870	Edward Bolton.
Furnaces (*saving fuel; preventing smoke.*)	3008	17th Nov. 1870	Heugh Wallace.
Furnaces for smelting iron (*economising fuel.*)	3054	22nd Nov. 1870	Richard Brown.
Improvements in condensing steam, in precipitating and reducing heat and smoke, and in apparatus therefor.	3123	29th Nov. 1870	Matthew Burnett.
Construction of furnaces for preventing or lessening smoke and effecting more perfect combustion of the fuel employed therein.	3135	30th Nov. 1870	Thomas Hydes. John Emil Bennett.
Boilers or steam generators (*saving fuel.*)	3137	30th Nov. 1870	Robert Lees.
Machinery, apparatus or means for heating, drying and finishing woven fabrics, drying yarns, fibrous materials and other similar substances. (*saving fuel.*)	3163	2nd Dec. 1870	John Weems. William Weems.
Lamps (*preventing smoke.*)	3254	12th Dec. 1870	William Denny Ruck.
An improved mode of generating steam for the purposes of the steam-engine. (*saving fuel.*)	3284	15th Dec. 1870	Humphrey Henchman.
Furnaces (*effecting economy of fuel.*) (*Communicated by Carl Wittenstrom.*)	3292	16th Dec. 1870	John Donald.
Means of and apparatus for preventing or curing smokey chimneys.	3330	21st Dec. 1870	William Peck Taylor.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SMOKE, &c.—*continued.*			
Improved means or apparatus for economising fuel. (*scrapers for removing soot.*)	3365	24th Dec. 1870	Andrew Bell.
Improvements in furnace doors and in apparatus connected therewith. (*preventing smoke.*)	3383	28th Dec. 1870	David Auld, the younger.
SOAP, SOAPY WATERS.			
A new compound and process for eliminating diseases and the cause of disease from the human body. (*antiseptic toilet soap.*)	308	2nd Feb. 1870	Alfred Manks Mort.
Improvements in the manufacture of soap and in the modes and means or apparatus employed therefor.	465	17th Feb. 1870	James MacNeill.
Soap frames - - - -	496	19th Feb. 1870	Charles Thomas.
A new or improved detergent compound to be used in the manufacture of soap, and for cleansing wool and woollen goods and for other like purposes.	1331	10th May 1870	William Hunt.
Improvements in apparatus for moulding and stamping soap and for other similar purposes, part of such improvements being also applicable to charging and discharging apparatus used in various other manufacturing operations.	1418	17th May 1870	Frederick John Cleaver.
An improved disinfecting and cleansing powder or saponaceous compound and vessel to contain the same.	1586	31st May 1870	Segismund Cohné.
Process and apparatus for making soap - - (*Communicated by Moses Hyde and Francis Hyde.*)	1766	21st June 1870	Benjamin Joseph Barnard Mills.
An improved mode or process for obtaining glycerine from soap makers' spent lyes. (*Communicated by Benjamin Talbot Babbitt.*)	1783	22nd June 1870	William Edward Newton.
Improvements in obtaining grease and oil from soapy and greasy water and in apparatus employed for this purpose. (*Communicated by Alfred Wilgot.*)	2520	19th Sept. 1870	Constant Bogaerts.
Manufacture of oil and other products of petroleum (*for soap.*) (*Communicated by Charles Toppan.*)	2762	20th Oct. 1870	William Robert Lake.
An improvement in apparatus employed in the manufacture of certain kinds of soap. (*crutching.*)	2824	27th Oct. 1870	John Hugh Anderson.
Improvements in the manufacture of soap and in chemical compounds applicable to the cure of skin diseases.	3096	25th Nov. 1870	Spendlove Desborough.
Soap-cutting machines - - -	3221	8th Dec. 1870	James Horner. Henry Starkey.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SOWING SEEDS AND DISTRIBUTING MANURE.			
Improvements in pipes, gutters, troughing and other apparatus for irrigating and manuring land, and in girders and framing for supporting the said apparatus and for other purposes.	503	21st Feb. 1870	Edwin Maw.
An improvement in brushes applied to drills for sowing all kinds of corn and seed. - -	567	25th Feb. 1870	Charles Dening. Samuel Henry Dening.
A new or improved apparatus for pulverising and distributing guano and artificial manure, applicable also to seed and other drills.	1254	2nd May 1870	Henry Beare.
A new or improved agricultural implement - (*dibbles.*)	1564	28th May 1870	George Thomson Leitch.
Machinery for cultivating land by steam or other power. - - - - (*turning drills.*)	1667	9th June 1870	William Fisken. Thomas Robert Hy Fisken.
Agricultural drills - - -	1931	7th July 1870	John Hensman. William Armstrong.
Agricultural drills - - -	2555	7th Oct. 1870	Samuel Randall. John Randall.
Apparatus for ploughing, harrowing and sowing land when steam power is employed. - -	2725	15th Oct. 1870	David Greig. Max Eyth.
Construction of irrigation conduits or channels for the conveyance and distribution of sewage and other waters.	3159	1st Dec. 1870	Henry Doulton.
Machinery or apparatus for the cultivation of land and for other purposes. (*sowing.*)	3317	19th Dec. 1870	William Jeffrey Hopkins.
SPECIFIC GRAVITY.			
Construction of hydrometers for taking the specific gravity of fluids.	2352	27th Aug. 1870	John Samuel Linford.
Machinery and arrangement for separating mixed substances or materials of different specific gravities.	2594	30th Sept. 1870	Henry Clifton Carver.
SPINDLES; SPINDLES AND FLYERS.			
Knobs and spindles for door locks and similar fastenings.	139	17th Jan. 1870	Alfred Beale Rocke.
An improved spindle for door handles - -	408	11th Feb. 1870	James Thompson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SPINDLES, &c.—*continued.*			
Improved means of oiling the bearings and journals of revolving shafts, spindles and pins of reaping and mowing machines. (*Communicated by Walter Abbott Wood.*)	635	3rd March 1870	James Theodore Griffin.
Machinery or apparatus for spinning or twisting worsted or other fibrous substances.	653	5th March 1870	Henry Sykes.
Machinery for spinning and doubling - -	680	8th March 1870	Samuel Brooks. George Harrison. John Wardle.
Improvements in machinery for turning, shaping, cutting and boring wood and other substances, and in machinery for preparing cutters or tools for turning. (*producing grooves on spindles.*)	933	31st March 1870	Jonathan Sellers.
Apparatus for lubricating and covering the spindles employed in machinery for preparing, spinning, doubling and winding fibrous materials.	1059	11th April 1870	John Billington Booth.
Machinery or apparatus for spinning, doubling and throwing silk, cotton and other fibrous substances. - - - - - (*flyer.*)	1061	13th April 1870	Michael Bailey. William John Almond.
Improvements in mills for grinding cattle food and other materials and in apparatus connected therewith. - - - - - (*making the spindle taper.*)	1189	23rd April 1870	Walkden Thompson. Thomas Stather.
Manufacture of bearings, slides and packings for steam-engines and other machinery. (*Communicated by Eliza Dexter Murfey.*)	1401	16th May 1870	John Henry Johnson.
An improved arrangement of apparatus for diminishing the friction of spindles, axles and other similar rotating bodies. (*Communicated by Ernest Maxime Theodore Cayeux.*)	1462	20th May 1870	Thomas James Smith.
Machinery or apparatus for making metal cop tubes (*construction of spindle.*) (*Communicated by James Eaton.*)	1503	24th May 1870	John Henry Johnson.
Machinery for winding cops for weft, warp or other purposes. (*making spindles.*)	1688	11th June 1870	John Combe.
Improvements in the manufacture of ornamental and other twisted metal work and in the machinery, apparatus or means employed therein. (*screw spindles.*)	2016	16th July 1870	Stephen Tuddenham.
Improvements in the arrangement of flyers, and in lifting plates, travellers and spindles or studs for spinning and doubling yarn or thread and in the machinery or apparatus employed therein.	2123	28th July 1870	John Grant.
Machinery for preparing and spinning cotton and other fibrous substances. (*tube or spindle.*)	2540	22nd Sept. 1870	Edwin Pettitt.
Spinning machinery - - - - (*Communicated by William Sparks Thomson.*)	2603	30th Sept. 1870	Alexander Horace Brandon.
Stop valves - - - - - (*valve spindle.*)	2631	4th Oct. 1870	Joseph Alfred Rothwell.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SPINDLES, &c.—*continued.*			
Improvements in bearings, packings for shafts, spindles, rods and other like pieces of machinery, and in materials employed in the manufacture of such bearings and packings. (*Communicated by Eliza Dexter Murfey.*)	2663	7th Oct. 1870	John Henry Johnson.
Machinery for preparing, spinning, winding and doubling cotton and other fibrous materials, partly applicable to lubricating upright shafts. - (*lubricating spindles.*)	2700	13th Oct. 1870	Robert Lakin. William Henry Rhodes. John Carpenter.
An improved mode of constructing doubling throstle and other flyers. (*Communicated by Emil Wenner.*)	2723	15th Oct. 1870	Alfred Wenner.
Hollow rolls or cylinders attached to spindles -	2789	22nd Oct. 1870	Anthony Gapper Southby.
Centrifugal drying machines or hydro-extractors - (*basket spindle.*)	2886	2nd Nov. 1870	John Nathaniel Leaware.
Lubricating apparatus for upright and other runners and bearings.	3026	18th Nov. 1870	William Cunningham.
Improvements in machinery or apparatus for spinning, twisting or doubling worsted woollen, cotton, silk or other fibrous substances and in means for preparing part of such apparatus.	3184	3rd Dec. 1870	Michael Stell.
Improvements in the construction of spindles and flyers for roving and slubbing frames and in tools or machinery for making the same. -	3191	5th Dec. 1870	James Johnson. John Lowe. Joseph Fowler.
SPINNING AND PREPARING FOR SPINNING.			
I.—Opening, Ginning, Breaking and Cleaning Fibrous Materials.			
Improved apparatus for preparing fibrous substances for spinning. (*Communicated by Emile Hubner.*)	104	12th Jan. 1870	Alfred Vincent Newton.
Machinery for preparing fibres for spinning - (*Communicated by André Koechlin.*)	106	12th Jan. 1870	Alfred Vincent Newton.
Improvements in machinery for breaking and softening flax and other fibrous materials, which improvements are also applicable to calendering rollers and other purposes where a combined reciprocating rotary motion can be employed.	128	15th Jan. 1870	Thomas Robert Hay Fisken.
Machinery for breaking, heckling, streaking and cleaning hemp, cleaning flax tow, washing wool, and heckling, cleaning or washing other fibrous materials.	280	31st Jan. 1870	Edward Brasier.
Machinery for breaking hemp, flax, jute or other similar material.	312	3rd Feb. 1870	William Shann.
Machinery for preparing flax and other fibrous materials for manufacturing purposes, but specially adapted for the preparation of the grass known as "crin."	337	5th Feb. 1870	Henry Gardner.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SPINNING, &c.—*continued.*			
Construction of clearers applicable to machinery used in the preparation of cotton and other fibrous materials.	410	11th Feb. 1870	Eli Stott. Amos Ogden. William Cookson Stafford.
Utilization of the dried or "hard" waste made in the process of wet flax spinning.	420	12th Feb. 1870	Jonas Brown.
Apparatus for preparing and spinning flax tow, wool and other similar fibrous substances.	455	16th Feb. 1870	Thomas Whitehead. Henry Walton Whitehead.
Machinery for preparing, spinning, twisting and doubling cotton and other fibrous materials.	494	19th Feb. 1870	Robert Lakin. John Bayley.
Treatment of certain fibrous substances to be used in the manufacture of paper pulp for paper and for conversion into textile fabrics.	587	28th Feb. 1870	Charles Duff.
Preparing, treating and purifying fibrous vegetable and fibrous animal substances.	588	28th Feb. 1870	Thomas Cattell.
Machinery or apparatus to be employed for preparing cotton and other fibrous substances for spinning.	915	29th March 1870	Alfred Wilcock. Richard Robinson. Frederick Wilcock.
Machinery for cleaning, preparing and spinning cotton and other fibrous substances.	1078	13th April 1870	Edward Lord.
Machinery or apparatus for separating and sorting cotton or other fibrous substances.	1195	25th April 1870	John Lord. Jonathan Gresty. Christopher Cross.
Machinery or apparatus for preparing wool or other fibrous substances for combing.	1224	28th April 1870	Pearson Smith. John Henry Leather. Edward David Arthur Marriner.
Machinery for breaking, softening and preparing flax and other fibrous materials.	1235	29th April 1870	Robert Hanham Collyer.
Machinery for scutching flax and other fibres	1370	13th May 1870	Thomas Coles. William Henderson.
Machines for lapping cotton and other fibrous materials. (*Communicated by Richard Kitson.*)	1451	19th May 1870	William Robert Lake.
Construction of machinery for preparing and hackling flax. (*scutching machine.*)	1591	1st June 1870	George Lowry. Samuel Brookes.
Woven and knitted fabrics and yarns (*Communicated by Louis Robbins and John Southmayd.*)	1661	8th June 1870	George Tomlinson Bousfield.
A new or improved machine for dressing and separating the fibres of certain fibrous substances, the same being specially applicable for treating rhea or china grass. (*Communicated by John Greig, the younger.*)	1690	11th June 1870	David Greig. John Greig.
An improved compound for the lubrication of wool and other similar animal material in their processes of manufacture.	1753	18th June 1870	John James Lundy.
Softening fibrous substances when batching, spinning or twisting them.	2067	21st July 1870	John Hunter.
Certain improvements in machinery for ginning cotton.	2262	15th Aug. 1870	David Ellis.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SPINNING, &c.—*continued.*			
Improvements in scutching flax and other fibrous substances and in the machinery or apparatus employed therefor.	2341	25th Aug. 1870	Christopher Robson.
Machinery for preparing and spinning cotton and other fibrous substances.	2540	22nd Sept. 1870	Edwin Pettitt.
Improvements applicable to machinery for washing or scouring wool and other fibrous materials, applicable also to other machinery for conveying, opening and cleaning fibrous materials. - - - - -	2942	8th Nov. 1870	William Thomas. William Rothwell.
II.—Carding, Combing and Heckling Fibrous Materials; Making Cards.			
Machinery for combing cotton, wool and other fibrous materials.	65	8th Jan. 1870	George Little.
Improved apparatus for preparing fibrous substances for spinning. (*Communicated by Emile Hubner.*)	104	12th Jan. 1870	Alfred Vincent Newton.
An improvement in that description of machinery for combing wool or other fibre commonly called "Noble's machines."	107	13th Jan. 1870	James Taylor, the younger.
Wool-combing and drawing machinery - -	151	18th Jan. 1870	Thomas Whitehead.
Machinery or apparatus for pointing or grinding hackle, gill, card or other pins and teeth used in machinery for preparing woollen, cotton, flax or other fibrous substances.	171	19th Jan. 1870	John James Richardson.
Certain improvements in carding engines -	174	20th Jan. 1870	William Noton.
A new or improved process for cleansing, drawing and tinning wire. (*for cards.*) (*Communicated by Jean Baptiste Auguste Daubié.*)	188	21st Jan. 1870	Thomas James Smith.
Carding engines for carding cotton and other fibrous substances.	275	31st Jan. 1870	Thomas Bispham Kay.
Machinery for breaking, heckling, streaking and cleaning hemp, cleaning flax tow, washing wool, and heckling, cleaning or washing other fibrous materials.	280	31st Jan. 1870	Edward Brasier.
Improvements in carding engines, which improvements are applicable to other similar purposes.	298	1st Feb. 1870	David Robertson.
Apparatus for grinding the card-covered surfaces of portions of the carding engines employed in the preparation of cotton and other fibrous materials.	355	7th Feb. 1870	Joseph Standring Dronsfield.
Utilization of the dried or "hard" waste made in the process of wet flax spinning.	420	12th Feb. 1870	Jonas Brown.
Certain improvements in the construction of cylinders and rollers used for carding cotton, wool or other fibrous substances.	470	17th Feb. 1870	Evan Arthur Leigh.
An improved process for the conversion of the hard waste of flax, hemp and tow into thread or yarn.	488	18th Feb. 1870	Jonas Brown.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SPINNING, &c.—*continued.*			
Hackling machinery applicable especially to phormium, tenax and other long fibres.	722	11th March 1870	John Moysey. Cornelius Thorne.
Machinery or aparatus for combing and straightening flax, hemp, jute and other fibrous substances. (*Communicated by Alberic Benoit Masurel, the younger.*)	724	11th March 1870	John Henry Johnson.
Carding engines for carding hemp, flax, tow, china grass, wool, silk, cotton and all other fibrous substances, both animal and vegetable, also for carding the waste of flax, hemp and tow, whether soft or hard waste, as well as cotton waste, cop bottoms, waste yarns or any other waste, or yarns the produce of any fibrous substances, either animal or vegetable, also for pulling and carding carpets, stockings, hosiery, rags, fents or remnants of any textile or felted or knitted fabrics of hemp, flax, tow, china grass, wool, silk, cotton or other fabric, the produce of any fibrous substances, either animal or vegetable.	734	12th March 1870	Jonas Brown.
Doffers of condensing carding engines and means or apparatus for effecting the same.	833	21st March 1870	Samuel Brooke.
An apparatus for measuring card filleting whilst in the process of making.	866	24th March 1870	Samuel Bateman.
Feeding apparatus for carding engines	935	31st March 1870	George Parsons.
Improvements in using the waste threads of condensing carding engines and in machinery to be used for that purpose.	1079	13th April 1870	Eli Weare.
Means or apparatus for feeding machinery employed in carding or preparing wool and other fibrous substances.	1148	20th April 1870	Edward Barnard Sampson.
Machinery for combing cotton, wool and other fibrous materials.	1177	22nd April 1870	George Little.
Machinery or apparatus for preparing and combing wool or other fibrous substances.	1228	29th April 1870	Mordecai Jefferson.
Machinery to be employed for combing wool, silk, flax and other fibres	1238	30th April 1870	Isaac Battinson. George Battinson.
Machinery for dressing flax, hemp and other analogous materials.	1317	9th May 1870	David Brown.
Certain improvements in carding engines	1480	23rd May 1870	James Macqueen.
Apparatus for feeding wool, cotton or other fibrous materials to carding or other machines.	1484	23rd May 1870	Philip Charles Evans. Henry James Hogg King.
Machinery for forming bats of wool for felting purposes. (*Communicated by Lyman Robinson.*)	1516	25th May 1870	John Falconer.
Machinery for combing wool, cotton, flax and other fibrous substances.	1531	26th May 1870	John Eastward, senior. Henry Walton Whitehead.
Machinery or apparatus for carding wool or other fibrous substances.	1582	31st May 1870	Alfred Dyson.
Construction of machinery for preparing and hackling flax	1591	1st June 1870	George Lowry. Samuel Brookes.
Carding and spinning machines (*Communicated by John Goulding.*)	1601	2nd June 1870	Alexander Horace Brandon.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SPINNING, &c.—*continued.*			
Machinery for combing wool, cotton, flax and other fibrous substances.	1617	4th June 1870	James Oddy. Henry Walton Whitehead.
An improved stop motion applicable to machinery or apparatus employed in bleaching, scouring, dyeing, sizing and dressing warps, yarns and fabrics, also in carding and combing wool or other fibrous substances.	1654	8th June 1870	William Dewhirst. Thomas Dewhirst. Joseph Dewhirst.
Machinery for dividing and condensing fibrous materials on carding engines.	1656	8th June 1870	Henry Bollinger.
An improved mode of forming bats of wool for felting purposes. (*Communicated by John Falconer.*)	1706	14th June 1870	Alfred Vincent Newton.
Doffing and dividing apparatus applicable to continuous cards. (*Communicated by J. S. Bolette.*)	1754	18th June 1870	Benjamin Joseph Barnard Mills.
Mode of manufacture of cloth (*mixing shorts.*)	1791	23rd June 1870	Robert Hudson.
Apparatus employed in preparing and combing wool and other fibres.	1896	5th July 1870	Edward Holden.
Cards employed in the carding of cotton and other fibrous materials.	2001	15th July 1870	George Ashworth. Elijah Ashworth.
Improvements in the manufacture of ornamental and other twisted metal work, and in the machinery, apparatus or means employed therein. (*beater bars for scutching machinery.*)	2016	16th July 1870	Stephen Tuddenham.
Condensing carding engines	2157	2nd Aug. 1870	William Richardson.
Certain improvements in the construction of cylinders and rollers used for carding cotton, wool, silk or other fibrous substances, also in roller carding generally.	2267	16th Aug. 1870	Evan Arthur Leigh.
Apparatus for feeding wool, cotton or other fibrous materials to carding or other machines.	2335	25th Aug. 1870	Henry James Hogg King.
Machinery for combing fibrous materials	2356	27th Aug. 1870	William Tongue.
Hackles of hackling machines employed in the preparation of flax, hemp, jute or other fibrous materials.	2406	3rd Sept. 1870	William John Emerson Priestley. James Forsyth.
Improvements in or applicable to machinery or apparatus for carding wool or other fibrous substances.	2441	9th Sept. 1870	Thomas Howard Blamires.
Wool-combing machines	2538	22nd Sept. 1870	Isaac Bailey.
Machinery for preparing and spinning cotton and other fibrous substances.	2540	22nd Sept. 1870	Edwin Pettitt.
Modes of regulating the position of card rollers and other articles requiring accurate adjustment.	2575	28th Sept. 1870	Edward Lord.
Machinery for spinning wool and other fibrous substances.	2681	10th Oct. 1870	Samuel Edward Asquith. Frederick Alexander Greenwood.
Improvements in combing and preparing cotton, wool and other fibrous substances, and in engines or machines in connection therewith. (*Communicated by Edouard Tavernier.*)	2691	12th Oct. 1870	Louis Ferdinand Tavernier.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SPINNING, &c.—*continued.*			
Machinery for preparing cotton and other fibrous materials.	2742	18th Oct. 1870	James Tomlinson.
Flat pins used in machinery for preparing and combing wool, jute, flax, silk, cotton and other fibrous materials. - - - - -	2747	19th Oct. 1870	James Rhodes. John James Richardson.
Machinery to be employed for combing wool and other fibres.	2854	29th Oct. 1870	John Robertshaw.
Machinery for preparing wool for combing -	2912	4th Nov. 1870	James Emmott.
Improvements applicable to machinery for washing or scouring wool and other fibrous materials, applicable also to other machinery for conveying, opening and cleaning fibrous materials. - (*applicable to carding-machines.*)	2942	8th Nov. 1870	William Thomas. William Rothwell.
Machinery or apparatus for carding wool or other fibrous substances.	3126	29th Nov. 1870	Alfred Dyson.
Machinery for combing cotton and other fibrous materials.	3171	2nd Dec. 1870	George Little.
Machinery or apparatus for combing wool or other fibrous substances. - - - - -	3293	16th Dec. 1870	Matthew Mirfield. John Scott.
XII.—Roving, Slubbing, Spinning, Twisting, Doubling and Throwing Fibrous Materials.			
Sickles and wires connected with mules for spinning.	14	3rd Jan. 1870	Joseph Smith.
Improvements in the manufacture of yarns, and in the machinery or apparatus employed therein.	27	4th Jan. 1870	John Gordon, the younger.
Improvements in the spinning and manufacture of stick and roll tobacco, and in the machinery therefor, parts of which are applicable to the spinning of other fibrous materials.	44	5th Jan. 1870	William Wharton.
An improvement in machinery used for spinning and doubling cotton and other fibrous substances.	64	8th Jan. 1870	Benjamin Brown.
Machinery for twisting woollen, flax, cotton, or other fibrous substances.	95	12th Jan. 1870	James Ambler.
Improved apparatus for preparing fibrous substances for spinning. (*Communicated by Emile Hubner.*)	104	12th Jan. 1870	Alfred Vincent Newton.
Machinery for preparing fibres for spinning - (*Communicated by André Koechlin.*)	106	12th Jan. 1870	Alfred Vincent Newton.
Wool-combing and drawing machinery - -	151	18th Jan. 1870	Thomas Whitehead.
Apparatus for spinning and doubling cotton and other fibrous substances.	165	19th Jan. 1870	Henry Ashworth.
Self-acting mules - - - - -	195	22nd Jan. 1870	James Macqueen.
Mechanism for spinning wool - - - (*ring spinning frames.*) (*Communicated by Darius Goff and Darius Lee Goff.*)	261	28th Jan. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SPINNING, &c.—*continued.*			
Improvements in machinery or apparatus for spinning, twisting, or doubling worsted or other fibrous substances, and in means for preparing part of such apparatus. (*trap twisting frames and cap frames.*)	334	5th Feb. 1870	Michael Stell.
Mode of working self-acting mules for spinning and doubling.	336	5th Feb. 1870	John Knowles.
Construction of clearers applicable to machinery used in the preparation of cotton and other fibrous materials.	410	11th Feb. 1870	Eli Stott. Amos Ogden. William Cookson Stafford.
Apparatus for preparing and spinning flax, tow, wool and other similar fibrous substances.	455	16th Feb. 1870	Thomas Whitehead. Henry Walton Whitehead.
Machinery for preparing, spinning and doubling	477	18th Feb. 1870	Edward Lord.
Machinery for preparing, spinning, twisting and doubling cotton and other fibrous materials.	494	19th Feb. 1870	Robert Lakin. John Bayley.
Machinery or apparatus for reeling slivers of wool direct from the gill box.	546	24th Feb. 1870	Edwd. Duce. Samuel Noble.
Improvements in the manufacture of yarns and fabrics containing horse hair, and in means or methods for shaping and utilizing fabrics containing the same or analogous stiffening material.	604	1st March 1870	Henry Hayward.
Machinery or apparatus for spinning or twisting worsted or other fibrous substances.	653	5th March 1870	Henry Sykes.
Machinery for spinning and doubling	680	8th March 1870	Samuel Brooks. George Harrison. John Wardle.
Improved methods of putting twist in sliver or yarn from flyer to rollers of frames for cotton, woollen and other fibrous substances.	720	11th March 1870	George Paley.
Mules for spinning and doubling	771	16th March 1870	Robert Lakin. William Henry Rhodes. John Wain. William Greasley.
Machinery for doubling and winding cotton and other yarns and threads.	899	28th March 1870	Robert Smith.
Improvements in or applicable to machinery for spinning and twisting fibrous substances.	900	28th March 1870	John Hopkinson. Robert Newton.
Machinery or apparatus to be employed for preparing cotton and other fibrous substances for spinning. (*slubbing, intermediate and roving frames.*)	915	29th March 1870	Alfred Wilcock. Richard Robinson. Frederick Wilcock.
Machines for doubling and spinning	953	1st April 1870	John Drabble. John Smith Raworth.
Machinery or apparatus to be employed in preparing cotton or other fibrous substances for spinning. (*duplex drawing and slubbing frame.*)	968	2nd April 1870	Alexander Barlow. John Taylor.
Improvements in or applicable to machinery for spinning mottled yarn.	985	4th April 1870	Alfred Whitaker. Eber Stead.
Machinery to be employed in drawing, spinning and twisting fibres.	993	5th April 1870	James Pickup.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SPINNING, &c.—*continued.*			
Sliver or cotton cans - - - - -	1040	8th April 1870	William Cooper.
Apparatus for lubricating and covering the spindles employed in machinery for preparing, spinning, doubling and winding fibrous materials.	1059	11th April 1870	John Billington Booth.
Improvements in the manufacture of yarns or threads and in apparatus to be used therein.	1076	12th April 1870	Gustavus Adolphus John Schott.
Machinery for cleaning, preparing and spinning cotton and other fibrous substances.	1078	13th April 1870	Edward Lord.
Machinery or apparatus for spinning, doubling and throwing silk, cotton and other fibrous substances. - - - - - -	1081	13th April 1870	Michael Bailey. William John Almond.
Machinery for spinning, twisting, doubling and throwing silk and other fibrous substances.	1112	16th April 1870	Thomas Dickins.
Machinery employed in slubbing, drawing and finishing worsted and other fibres.	1181	23rd April 1870	Thomas Feather.
Improvements in or applicable to machines for spinning and doubling fibrous materials.	1182	23rd April 1870	George Bernhardt.
Process or method of drawing flax and other fibrous substances.	1281	4th May 1870	John Campbell.
Machinery or apparatus for spinning wool and other fibres into yarn. - - - - -	1292	5th May 1870	John May. Matthew May.
Machinery or apparatus for spinning, twisting and roving worsted or other fibrous substances.	1319	9th May 1870	John Speight.
Machinery for spinning or twisting flax, hemp, jute and other fibrous substances.	1325	9th May 1870	Hugh McEntee Ward.
Machinery for spinning and doubling cotton and other fibrous materials.	1376	13th May 1870	John Dodd.
Improvements in doubling cotton or other fibrous substances and in the machinery or apparatus employed therefor.	1442	19th May 1870	Sigmund Baerlein.
Supporting apparatus for the rollers of spinning frames. (*Communicated by Florentin Augustin Steverlynck-Delecroix, Edmond Steverlynck and Léon Steverlynck.*)	1506	24th May 1870	William Robert Lake.
Machinery for spinning and doubling cotton and other fibrous materials.	1538	27th May 1870	Alexander Frerichs.
Carding and spinning machines - - - - (*Communicated by John Goulding.*)	1601	2nd June 1870	Alexander Horace Brandon.
Machinery for drawing wool, silk, flax and other fibrous substances.	1659	8th June 1870	Thomas Greenwood.
Certain improvements in the preparation of "cops" and "healds" employed in the manufacture of woven fabrics. - - - - -	1785	23rd June 1870	Thomas Richmond. Christopher Catlow.
Construction of revolving coilers applicable to looms for spinning hemp, flax, and other textile matters. - - - - -	1794	24th June 1870	Armand Ruiz. Edouard Le Pelletier.
Machinery or apparatus for spinning and twisting or doubling fibrous substances. (*cap frames.*)	1798	24th June 1870	Joseph Smith.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SPINNING, &c.—*continued.*			
Machinery or apparatus for manufacturing "spool" or paper tubes for use in spinning machinery. (*Communicated by Joseph Geiger and Aloyse Geiger.*)	1805	25th June 1870	James Shackleton. Benjamin Shackleton.
Improved strapping motion in mules for spinning	1838	28th June 1870	Aaron Metcalf. William Gibbons.
Apparatus employed in drawing, roving, doubling, spinning and twisting wool and other fibres.	1887	4th July 1870	Thomas Broughton. Wilson Riley.
Machinery for spinning and twisting fibrous substances.	1912	6th July 1870	Hugh McEntee Ward.
Apparatus for cleaning the fluted and top rollers of machines used in preparing and spinning cotton and other fibrous substances.	1922	7th July 1870	Benjamin Dobson. Thomas Thornley. John Settle.
Improvements in the arrangement of flyers and in lifting plates, travellers and spindles or studs for spinning and doubling yarn or thread, and in the machinery or apparatus employed therein.	2123	28th July 1870	John Grant.
Certain improvements in machinery for preparing cotton and other fibrous substances.	2230	11th Aug. 1870	Samuel Brooks. John Standish.
Mules for spinning	2289	19th Aug. 1870	John Rawcliffe, junior. Walter Bibby. Andrew Fleming.
Improvements in cord making and in the apparatus connected therewith. (*spinning the yarn.*)	2313	22nd Aug. 1870	Pierre Motiron. Pierre Huchard. Achille Drouot.
A new system of spinning and apparatus connected therewith.	2371	30th Aug. 1870	Simon Boucher.
Machinery for preparing and spinning cotton and other fibrous substances.	2540	22nd Sept. 1870	Edwin Pettitt.
Machinery for drawing, spinning and twisting flax, tow, wool, worsted, silk, cotton, china-grass or other fibrous substances.	2548	23rd Sept. 1870	William Bywater. Jack Shaw.
Mules for spinning	2549	23rd Sept. 1870	Thomas Rawsthorne.
Manufacture of sheet metal rollers or drums	2585	29th Sept. 1870	James Hall. George Hall.
Spinning machinery (*Communicated by William Sparks Thomson.*)	2603	30th Sept. 1870	Alexander Horace Brandon.
Applying tubes of paper or other material to spindles of mules and other spinning or doubling machines.	2617	1st Oct. 1870	Frederick Wilkinson.
An improved apparatus for damping threads or yarns in the processes of spinning, winding, reeling and warping, or other similar processes.	2623	3rd Oct. 1870	Edmund Leach.
Machinery for spinning and twisting fibrous substances.	2626	3rd Oct. 1870	William Hoyle. Joseph Harrison. Joseph Rothera.
Machinery for spinning wool and other fibrous substances.	2681	10th Oct. 1870	Samuel Edward Asquith. Frederick Alexander Greenwood.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SPINNING, &c.—*continued.*			
Machinery for preparing, spinning, winding and doubling cotton and other fibrous materials, partly applicable to lubricating upright shafts.	2700	13th Oct. 1870	Robert Lakin. William Henry Rhodes. John Carpenter.
An improved mode of constructing doubling, throstle and other flyers. (*Communicated by Emil Wenner.*)	2723	15th Oct. 1870	Alfred Wenner.
Machinery for drawing, spinning and twisting flax, tow, wool, worsted, silk, cotton, china grass or other fibrous substances.	2814	26th Oct. 1870	William Bywater. Jack Shaw.
Mules for spinning	2858	31st Oct. 1870	John Hawkins. Joseph Hawkins. James Hawkins. Henry Hawkins. Charles Willson Hawkins. John Cuerdale.
Improvements in or applicable to machinery for spinning or twisting fibrous substances.	2967	11th Nov. 1870	Mark Dawson. George Frederick Dawson.
Self-acting mules	2968	11th Nov. 1870	Thomas Hart.
Improvements applicable to machinery for doubling yarns or threads of cotton or other fibrous materials.	3170	2nd Dec. 1870	George Little.
Improvements in machinery or apparatus for spinning, twisting or doubling worsted, woollen, cotton, silk or other fibrous substances, and in means for preparing part of such apparatus.	3184	3rd Dec. 1870	Michael Stell.
Improvements in the construction of spindles and flyers for roving and slubbing frames and in tools or machinery for making the same.	3191	5th Dec. 1870	James Johnson. John Lowe. Joseph Fowler.
Certain improvements in self-acting mules	3338	21st Dec. 1870	Samuel Oddy.
Machinery or apparatus used in the preparation of cotton or other fibrous materials for spinning. (*drawing, roving and intermediate frames.*)	3401	31st Dec. 1870	James Walsh.
For spinning tobacco, *see* "TOBACCO."			
SPITTOONS.			
Spittoons for the seats of railway carriages and for other seats.	2484	15th Sept. 1870	John Joshua Eustace. John Bennett Spearing.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SPONGE, ARTIFICIAL SPONGE, METALLIC SPONGE.			
Improvements in india-rubber manufactures and in tools or machinery employed therein. (*sponge bags.*)	295	1st Feb. 1870	George Broadhurst. John Swindells. John Kershaw.
Tanning (*tanning sponges.*) (*Communicated by Louis André Beaudet.*)	716	10th March 1870	Michael Henry.
Collars and saddles for horses and other animals (*using india-rubber sponge.*)	760	15th March 1870	Charles Stockbridge.
SPRINGS.			
Sewing-machine needles and needle arms (*looped spring.*) (*Communicated by George Albert Lloyd.*)	294	1st Feb. 1870	William Robert Lake.
Printing presses (*to the inking roller arms.*) (*Communicated by Merritt Gally.*)	322	3rd Feb. 1870	Alexander Melville Clark.
Spring seats and bed bottoms (*Communicated by John Lorenzo Whipple.*)	407	11th Feb. 1870	William Robert Lake.
Springs for carriages and other purposes (*Communicated by Andrew Jackson Dexter.*)	523	23rd Feb. 1870	William Edward Newton.
Construction of reaping and mowing machines (*applying a spring to balance weight of pole.*)	1161	21st April 1870	William Arundell Ostey.
Improvements in springs and in apparatus for making the same.	1389	14th May 1870	James Baird Handyside. Thomas Richardson Yarrow.
Furniture springs for seats, mattresses and other similar articles. (*Communicated by John Perlee Ryan.*)	1604	2nd June 1870	William Edward Newton.
Improvements in bells and in the mode of hanging the same. (*springs for preventing rebounds.*) (*Communicated by Auguste Laroÿe.*)	1748	18th June 1870	Alexander Melville Clark.
An internal spring coupling and brake for transmitting, stopping or regulating motion.	1777	22nd June 1870	Léandre Mégy. Joseph de Echeverria. Felix Bazan.
Eliptical clip adjustments of door springs or hinges	1833	28th June 1870	Douglas Mole.
An improved spring-fastener for railway carriage and other windows.	2043	20th July 1870	John Edward Makins.
Marine chronometers, watches, railway and other time-keepers.	2084	23rd July 1870	George Children Philcox. Thomas Saint.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SPRINGS—*continued.*			
Improvements in the construction of railway buffer and draw springs, and in bearing springs for railway carriages, and in the use of the same for carriages for common roads, such springs being adapted to other purposes. - - -	2144	1st Aug. 1870	Edward Otto. Newton Wilson.
Cut-off valve gear for steam engines - - (*spring.*) (*Communicated by Daniel Frank Mosman.*)	2528	20th Sept. 1870	David Hunter Brandon.
Springs for railway carriages - - - (*Communicated by Richard Vose.*)	2829	27th Oct. 1870	William Robert Lake.
Improvements in boxes and bearings for axles and other shafts and in compositions to be applied thereto. (*Communicated by Eliza Dexter Murfey.*)	2879	1st Nov. 1870	John Henry Johnson.
Holders and portfolios for holding or filing music and other sheets and for other like purposes. (*making the springs.*)	2971	11th Nov. 1870	Frederick Brampton.
Hydro-carbon lighting apparatus, chiefly designed for locomotives and signals. (*Communicated by Myron Hopkins Strong, Thomas Barbour, Charles Cunningham Connor and Robert Barbour.*)	3061	23rd Nov. 1870	William Robert Lake.
Springs chiefly designed for railway and other carriages. (*Communicated by Patrick Sarsfield Devlan, Isaac Pennington Wendell and Stephen Paschall Morris Tasker.*)	3290	15th Dec. 1870	William Robert Lake.
Apparatus for regulating the motion and action of door springs.	3309	19th Dec. 1870	Alexander Charles Moffatt.
STABLES, CATTLE SUPPORTS DURING SHIPMENT, SHEEP FOLDS, LAMB CREEPS.			
Mode of supporting and securing cattle whilst being conveyed on board ships and other vessels.	519	22nd Feb. 1870	Francis Fitzgerald.
An improved automatic lamb-creep - -	1034	8th April 1870	William Hugh Carson. John Vidler Toone.
An improved pavement - - - (*for stable floors.*)	2306	20th Aug. 1870	Charles Pinnington.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STAMPS AND STAMPING; SEALS, MONOGRAMS, LABELS AND TICKETS; DAMPING, CANCELLING AND PROTECTING STAMPS AND LABELS.			
Means or apparatus for damping copying paper, stamps, labels and other materials and articles.	57	7th Jan. 1870	Henry Pritty.
Improved means of preventing impersonation - (*by photographed portraits on railway tickets.*)	385	9th Feb. 1870	Charles Baylis.
Machines for printing and indenting dates on or into railway and other tickets and for analogous purposes.	425	12th Feb. 1870	William Thomas Whiteman.
Improved machinery for stamping and embossing -	447	16th Feb. 1870	Edwin William Knowles.
Improvements in stamps for marking linen and in marking ink for the same, such stamps being also applicable to other purposes.	475	17th Feb. 1870	Adam Millar.
Atmospheric stamps and hammers, partly applicable to other purposes.	749	15th March 1870	William Husband.
Apparatus for holding postage and other stamps for office and general uses. (*Communicated by G. Cliffe Hatch.*)	800	17th March 1870	Thomas James Smith.
Improvements in railway or other season tickets and in appliances connected therewith.	883	25th March 1870	Adam Dixon.
An improved endorsing or marking press or stamp	925	30th March 1870	John Tietjen.
Improved means of securing envelopes and their contents.	988	4th April 1870	Charles James Eyre.
An improved stamping apparatus, chiefly designed for impressing names, addresses, dates and numbers upon letters, envelopes and other papers. (*Communicated by Messrs. Towle and Harding.*)	1313	7th May 1870	William Robert Lake.
Improvements in apparatus for moulding and stamping soap and for other similar purposes, part of such improvements being also applicable to charging and discharging apparatus used in various other manufacturing operations.	1418	18th May 1870	Frederick John Cleaver.
Cases or receptacles for needles, pins, matches, pens, cards, stamps, photographs, cotton and other similar articles.	1473	21st May 1870	William Avery.
A new and improved label holder and fastener - (*Communicated by Victor Amilhau.*)	1552	27th May 1870	Henri Adrien Bonneville.
An improved device for fastening tickets upon woven goods and other articles. (*Communicated by Léon Georges Gassion.*)	1923	7th July 1870	William Robert Lake.
A new method of indicating or stamping with the standard or other mark china, earthenware and metallic measures for containing beer and other liquids.	2121	28th July 1870	William Haden Richardson.
Improved means for preventing the frudulent use of bonds, receipts, cheques, tickets and other like articles. - - - -	2126	29th July 1870	Thomas Rice Hayes. Charles Rolla Peters.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STAMPS, &c.—*continued.*			
Improvements in the manufacture of "spool" tubes and other tubes of paper, and in dyeing or coloring and marking the same, and in machinery or apparatus to be employed therefor.	2292	19th Aug. 1870	William Ambler.
Railway and other season tickets - -	2333	25th Aug. 1870	Thomas Alton Letts.
An improved process for marking railway and other tickets, trade-mark labels, commercial cards or similar printed forms.	2375	30th Aug. 1870	William Thomas Guyatt.
Apparatus for dating or marking railway and other tickets, cards, invoices, bills of lading and documents.	2395	2nd Sept. 1870	John Lewthwaite.
An improved method of impressing, gilding and printing on the edges and covers of books.	2400	2nd Sept. 1870	Robert Leighton.
Stamping or embossing presses - -	2556	23rd Sept. 1870	Charles Frederick Carter.
Machinery and tools for pressing washers, bucket cars, box clips and similar articles out of sheet metal. - - - - -	2563	24th Sept. 1870	George Price. George Arthur Price.
An improved apparatus for attaching stamps or labels to letters, envelopes and other documents, and for separating and embossing stamps and labels.	2665	8th Oct. 1870	Leopold Beral Bertram.
An improved method of producing divers coloured letters, figures or other characters upon a card, ticket, label, placard or other like article, or upon any suitable surface for advertizing or similar purposes.	2687	11th Oct. 1870	Charles John Letts.
Certain improvements in mechanism or apparatus to be employed for simultaneously printing and delivering checks or tickets consecutively numbered or otherwise to persons entering places of amusement, riding in public vehicles, or for other purposes where checks are required as a means of detecting fraud.	2726	15th Oct. 1870	Richard Alphaeus Gooding.
Improvements in presses for relief, stamping or printing, and in reservoir ink or colour rollers for regulating the flow of ink or colour therefrom.	2844	28th Oct. 1870	John Gough.
Advertising and apparatus connected therewith - (*stamping, perforating, distributing tickets.*)	2944	8th Nov. 1870	Henry Cyrus Symons.
STARCH, SIZE, GLUE, GUM, GELATINE.			
Improvements in the manufacture of size and in the application of a certain material for conditioning cotton and other fibrous substances. -	375	9th Feb. 1870	Christopher Crossley. Robert Whipp. Thomas Crossley.
Improvements in the treatment of hides and skins, in tanning and otherwise utilizing all portions or pieces thereof, and in the treatment of goods already tanned. - - - (*cuttings available for making size or glue.*)	863	24th March 1870	Henry Richardson Fanshawe. William Henry Smith.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STARCH, &c.—*continued.*			
Manufacture of size - - -	1020	7th April 1870	Christopher Crossley. Robert Whipp. Thomas Crossley.
An improved glue pot - - - -	1782	22nd June 1870	George Speight.
An improved machine for reducing "isinglass" or brewers' finings. - - - -	2245	12th Aug. 1870	James Gale. Henry Ormston.
Treating glue - - - - - -	2268	16th Aug. 1870	George Speight.
Treatment of resinous gums employed in the manufacture of varnishes. - -	2804	25th Oct. 1870	Charles Watts. Thomas Charles Watts.
Manufacture of alkalized isinglass sulphited and bisulphited. (*Communicated by Baylis Child.*)	2969	11th Nov. 1870	Edward Herring.
Improved compositions for sizing, dressing and finishing threads, yarns, textile fabrics and paper.	3273	14th Dec. 1870	Elijah Slack.
STEAM AND OTHER BOILERS; CLEANSING AND PREVENTING INCRUSTATION OF BOILERS; WATER-FEEDING APPARATUS FOR BOILERS.			
I.—Constructing Steam and other Boilers; Generating and Superheating Steam; Preventing Boiler Explosions.			
Improvements in the construction of steam boilers and generators and in the machinery or apparatus employed therein.	29	4th Jan. 1870	William Henry Adcock.
Heating apparatus - - - - (*boilers for hot water apparatus.*) (*Communicated by Jules Henry Weibel.*)	54	6th Jan. 1870	John Henry Johnson.
Improvements in the construction of steam and other boilers and in apparatus used therewith for economising heat, condensing steam and saturating heated air.	124	15th Jan. 1870	James Wadsworth.
Improvements in steam engines and in the boilers and furnaces to be used therewith.	166	19th Jan. 1870	Edward Wood.
Producing heat and light - - - (*producing steam.*)	228	25th Jan. 1870	Cromwell Fleetwood Varley. Theodore Anthony Rochussen.
Construction and application of hot-water boilers, joints and valves. - - -	256	28th Jan. 1870	Alfred William George Weeks. George Deal. George Lillywhite. Alexander Oliver Launders.
Motive-power engines and steam generators to be used therewith, suitable for domestic purposes. (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STEAM-BOILERS, &c.—*continued.*			
Means or apparatus for straightening, stamping-out, shearing and otherwise shaping and treating iron, steel, copper, and other metallic plates and sheets. (*for boilers.*) (*Communicated by Gustave Piedbœuf.*)	351	7th Feb. 1870	Hermann Wedekind.
Improvements in steam and other boilers, and superheating, condensing, refrigerating and evaporating vessels and apparatus, and in the plates and tubes employed.	449	16th Feb. 1870	Thomas Webster Rammell.
Manufacture of non-conducting material for preventing the radiation of heat. (*covering for boilers.*)	531	23rd Feb. 1870	Charles Henry Aston.
Steam-boilers and engines - - - (*Communicated by Francis Brown Blanchard.*)	549	24th Feb. 1870	William Edward Newton.
Apparatus employed to produce inflammable gas from mineral or other oils, modifications of which apparatus are also applicable to be employed in the heating of water or the generation of steam.	593	28th Feb. 1870	Thomas Clayton. John Taylor.
Boiler fittings - - - - -	634	3rd March 1870	William Henry Bailey.
Improvements in the application of power for the propulsion of vehicles on common roads or railways and in apparatus connected therewith. (*Communicated by Henri Adolphe Corbin.*)	664	5th March 1870	Alexander Melville Clark.
Improved steam boilers and furnaces, utilizing the lost heat of lime, cement, brick or other circular or other kilns.	670	7th March 1870	Pierre Joseph Robine.
Improvements in the manufacture of pulp for making paper or papier-maché and in the apparatus employed therein.	675	7th March 1870	William Law.
Improved apparatus for generating steam or elastic vapours for actuating motive-power engines. (*Communicated by Jean Baptiste Givord.*)	691	8th March 1870	William Edward Newton.
An improved arrangement of furnace and boiler for the generation of steam.	692	9th March 1870	Joseph Hopkinson.
Construction of steam and hot-water boilers and coils in sections.	695	9th March 1870	Thomas Seaville Truss.
Improvements in the manufacture of hollow cast-iron cooking utensils, and in the means or apparatus employed therefor or connected therewith, part of which apparatus is applicable to the moulding of other articles. (*erecting the steam-boilers.*)	696	9th March 1870	John Neilson.
Improvements in vulcanizers or apparatus employed in vulcanizing india-rubber, which improvements may also be applied to the regulation of the flow of gas for various purposes. (*heating boilers.*)	726	11th March 1870	Charles Jackson.
Certain improvements in water-tube boilers -	790	17th March 1870	John Pinchbeck.
The application of cork for preventing loss of heat by radiation, and also for protecting bodies against heat. (*casing steam boilers.*)	791	17th March 1870	Germond de Lavigne.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STEAM-BOILERS, &c.—*continued.*			
Locomotive and other steam boilers having fire-boxes.	801	18th March 1870	Stanhope Perkins.
Improvements in steam-boilers and in apparatus for generating steam.	804	18th March 1870	William West.
Steam-boilers - - - - - -	810	18th March 1870	Sir William Fairbairn, Baronet.
Means and apparatus for increasing the efficiency of steam generators.	844	22nd March 1870	David Joy.
Steam-boilers or generators - - -	868	24th March 1870	Edwin Cambridge.
Utilizing exhaust steam - - - -	976	2nd April 1870	Joseph Shackleton.
Safety apparatus for steam-boilers - -	1125	18th April 1870	Alexander Morton Strathern, David Graeme Morrison.
Apparatus to promote circulation in locomotive steam-boilers. (*Communicated by William Blane Mack.*)	1153	20th April 1870	Robert Sinclair.
Improvements in the manufacture and in the securing of tubes, taps and plugs in boilers and other vessels, also in certain modes of regulating and stopping the flow of liquids, gases or air into or from such vessels.	1180	22nd April 1870	Charles Lungley.
Boilers, air heaters, steam condensers and analogous constructions for transferring heat from one fluid to another.	1191	25th April 1870	Samuel Dyer Tillman.
Construction of multitubular steam boilers - (*Communicated by Georg Friedrich Udelhoven.*)	1207	26th April 1870	Alexander Browne.
Steam-boilers and the furnaces thereof - -	1217	27th April 1870	James Burnley. William Nichols.
Means of and apparatus for generating and heating steam in steam boilers and other vessels, and for heating the liquid contents thereof.	1245	30th April 1870	Owen Murrell.
Furnaces and boilers - - - - -	1290	5th May 1870	Thomas Ellis.
Improvements in obtainjng and applying heat, and in furnaces employed therein, also in utilizing a product resulting therefrom. (*for generating steam.*)	1304	6th May 1870	Thomas Don.
Steam engines and boilers - - -	1341	11th May 1870	Thomas William Wedlake.
Apparatus adapted to be used for refrigerating, and also for heating purposes. (*circulating boiler.*)	1373	13th May 1870	Edward George Peacock.
Manufacture and application of a composition or compositions for preserving the surfaces of walls, metals, wood and other materials. (*covering boilers.*)	1379	14th May 1870	Prosper Pimont.
Boilers for heating water for baths and for domestic and for other purposes. - - - -	1384	14th May 1870	Frederick Nicholas Meixner. James Watmough.
Construction and arrangement of steam boilers -	1416	17th May 1870	Edward Green.
Apparatus for the production of gases for lighting and heating purposes. (*heating steam boilers.*) (*Communicated by Xavier Moussard.*)	1456	19th May 1870	Alexander Melville Clark.
Apparatus for lighting and heating purposes -	1467	20th May 1870	Albert Marcius Silber. Frederick White.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STEAM-BOILERS, &c.—*continued.*			
Improvements in steam-boilers and in apparatus connected therewith.	1468	20th May 1870	Gustav Fischer.
Construction and arrangement of valves for regulating the supply or discharge of steam, water and other fluids.	1472	21st May 1870	Thomas Holt Lloyd.
Setting horizontal stationary boilers - -	1489	23rd May 1870	Jeremiah Head.
Steam-boilers - - - -	1533	26th May 1870	William Arnold, William Carnelley.
Safety attachments for steam generators - (*Communicated by Hiram Kimball.*)	1549	27th May 1870	Benjamin Joseph Barnard Mills.
A new or improved boiler and furnace for heating churches, public buildings, conservatories and other like purposes.	1627	4th June 1870	John Gabb.
Treatment of slag and other vitreous material - (*for covering steam-boilers.*) (*Communicated by Henry Baldwin, junr.*)	1644	7th June 1870	George Tomlinson Bousfield.
Steam-boilers - - - - (*Communicated by John Benjamin Root.*)	1675	9th June 1870	William Edward Newton.
Improvements in steam and other vessels, and in steam-engines, steam-boilers and propellers applicable thereto, parts of which improvements are adapted for other purposes. (*Communicated by James Montgomery.*)	1691	11th June 1870	Benjamin Joseph Barnard Mills.
Steam generators - - - (*Communicated by Henry Petitpierre.*)	1843	28th June 1870	Alexander Melville Clark.
Construction of steam-boilers - - - (*Communicated by George Whitfield.*)	1852	29th June 1870	Sidengham Duer.
Improvements in steam generators and in furnaces therefor. (*Communicated by S. Lloyd Wiegand.*)	1856	30th June 1870	William Robert Lake.
Construction and regulation of boilers for heating buildings.	1889	4th July 1870	Ambrose Marriott.
Improvements in evaporating and boiling or concentrating liquids, and in apparatus employed therein. (*Communicated by Jean Francois Cail.*)	1900	5th July 1870	John Henry Johnson.
New or improved apparatus for preventing priming in steam-boilers.	1966	12th July 1870	Robert John Scott.
Steam generators - - - - (*Communicated by Augustin Pierre Joseph Rennesson.*)	1983	14th July 1870	William Spence.
Steam generators - - - -	1996	14th July 1870	Charles Mathew Barker.
Steam-boilers - - - -	2035	19th July 1870	James Noah Paxman. Henry Matthews Davey.
Certain improvements in water tube boilers -	2118	28th July 1870	John Pinchbeck.
Horizontal steam-boilers - - -	2169	4th Aug. 1870	Robert Porter. Thomas Lane.
An improved steam generator - - - (*Communicated by Nelson Horatio Barbour.*)	2211	9th Aug. 1870	William Armand Gilbee.
Improvements in drawing and bending sheet metal and in the machinery or apparatus therefor. (*for boilers.*)	2257	13th Aug. 1870	James Robertson.
Steam-boilers - - - - (*Communicated by John Benjamin Root.*)	2414	5th Sept. 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STEAM-BOILERS, &c.—*continued.*			
A new or improved tube expander and tube cutter combined.	2434	8th Sept. 1870	Treat Timothy Prosser.
Construction of fire bars and for the employment of them for heating the feed for generating steam, and for keeping the bars cool.	2459	12th Sept. 1870	Charles Stephens.
Improvements in steam boilers or generators, and in the method of generating steam. (*Communicated by Robert Patterson.*)	2496	16th Sept. 1870	Henry Patterson.
Improved means or apparatus for stopping or regulating the flow of fluids, gases or steam.	2556	7th Oct. 1870	Martyn John Roberts.
Apparatus for supplying hot water for general use in dwelling-houses.	2573	27th Sept. 1870	Samuel Bennett.
New or improved modes of and means or apparatus for utilizing the power and heat of the steam used in motive power engines and for other purposes. (*Communicated by Treat Timothy Prosser.*)	2606	1st Oct. 1870	William Richard Middlemore Thomson.
Stop valves - - - - (*steam-valves.*)	2631	4th Oct. 1870	Joseph Alfred Rothwell.
Steam-engines - - - - - (*supplementary boiler.*) (*Communicated by John Houpt.*)	2678	10th Oct. 1870	William Robert Lake.
Improvements in applying heat to steam-boilers, and in apparatus therefor.	2748	19th Oct. 1870	Brierley Denham Healey.
Water-heating apparatus - - -	2771	20th Oct. 1870	Joseph Russell.
Construction of evaporating apparatus - - (*for generation of steam.*)	2774	21st Oct. 1870	Charles Henry Moberly.
Improvements in the manufacture of salt, and in the apparatus employed therein. (*high-pressure steam generator.*) (*Communicated by J. R. Buchanan.*)	2782	21st Oct. 1870	William Edward Newton.
Multitubular steam-boilers - - -	2802	25th Oct. 1870	John Colpman Bradshaw, the younger.
Steam-boilers or generators - - -	2818	27th Oct. 1870	James Stead Crosland.
Improved methods of and apparatus for utilising the waste and spare or live steam, waste and spare heat, and waste and spare momentum of locomotive and other steam-engines.	2906	3rd Nov. 1870	Thomas Arthur Dillon.
Boilers for heating liquids, generating steam and other like purposes.	2909	4th Nov. 1870	Peter Brotherhood.
Steam-boilers or generators - - -	2923	5th Nov. 1870	John William Kenyon.
Safety valves - - - -	2954	10th Nov. 1870	John Addy Hopkinson. Joseph Hopkinson, junior.
Construction of and apparatus for concentrating sulphuric acid. (*constructing the boilers.*)	2975	12th Nov. 1870	August Ferdinand De Hemptinne.
Improvements in steam generators, and in apparatus in connection therewith. - -	3025	18th Nov. 1870	Thomas Mills. William Bryce.
Improvements in the manufacture of iron and steel, and in furnaces and apparatus to be used in the said manufacture, parts of which improvements may also be applied to other purposes. (*generating steam.*)	3099	25th Nov. 1870	Thomas Callender Hinde.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STEAM-BOILERS, &c.—*continued.*			
Improvements in condensing steam, in precipitating and reducing heat and smoke, and in apparatus therefor.	3123	29th Nov. 1870	Matthew Burnett.
Boilers or steam generators	3137	30th Nov. 1870	Robert Lees.
Boilers for generating steam (*Communicated by Richard Lever.*)	3147	1st Dec. 1870	Robert Boyd.
Improved means for securing the joints of steam-boilers and tubes.	3206	6th Dec. 1870	James Howard. Edward Tenney Bousfield.
Construction of boilers for locomotive engines (*Communicated by Mr. Becker.*)	3224	8th Dec. 1870	John Clayton Mewburn.
Steam-boilers	3249	12th Dec. 1870	John Hosking. John Morrison.
An improved method of generating steam for the purposes of the steam-engine.	3264	15th Dec. 1870	Humphrey Henchman.
Cocks and valves (*for the passage of steam.*)	3304	17th Dec. 1870	Sydney Smith.
Improvements in the mode of condensing saccharine juices and in apparatus to be employed therein, which apparatus is applicable to evaporating other liquids. (*construction of boiler.*)	3324	20th Dec. 1870	Robert Tooth.
Steam-boilers (*Communicated by Alfredo Jahn.*)	3335	21st Dec. 1870	Robert Boyd.
A new system of railway adapted for the traffic of crowded streets of cities or towns or other places, of carriages for such railway, and means for propelling and stopping the same, part of which is applicable to the ordinary railway system. (*form of boiler.*)	3386	28th Dec. 1870	William Robertson.
Improvements in steam generators and in furnaces therefor. (*Communicated by S. Lloyd Wiegand.*)	3390	29th Dec. 1870	William Robert Lake.
See also "FURNACES." "GAUGES."			
XI.—Cleansing and Preventing Incrustation of Boilers; Purifying the Water.			
Construction and application of hot-water boilers, joints and valves.	256	28th Jan. 1870	Alfred William George Weeks. George Deal. George Lillywhite. Alexander Oliver Launders.
Boiler fittings	634	3rd March 1870	William Henry Bailey.
Certain improvements in water tube boilers (*cleansing the tubes.*)	790	17th March 1870	John Pinchbeck.
Apparatus for removing soot and other deposit from the tubes of steam boilers.	999	5th April 1870	Edward Green.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STEAM-BOILERS, &c.—*continued.*			
Apparatus to promote circulation in locomotive steam-boilers. (*fitting with sediment collector.*) (*Communicated by William Robert Mack.*)	1153	20th April 1870	Robert Sinclair.
Construction of multitubular steam boilers - (*Communicated by Georg Friedrich Udelhoven.*)	1207	26th April 1870	Alexander Browne.
Construction and arrangement of steam-boilers -	1416	17th May 1870	Edward Green.
Steam-boilers - - - - - - (*Communicated by John Benjamin Root.*)	1675	9th June 1870	William Edward Newton.
Means of producing and regulating motive power -	1859	30th June 1870	John Bourne.
Certain improvements in water tube boilers -	2118	28th July 1870	John Pinchbeck.
Apparatus for cleansing steam boilers - -	2299	20th Aug. 1870	Joseph Whitehead Broadbent.
Improvements in apparatus for economizing the waste heat and gases from furnaces, and in means for generating, collecting, and purifying gases, such gases being applicable to various useful purposes. (*applicable for preventing incrustation.*)	2377	31st Aug. 1870	Thomas Atkins.
Improvements in apparatus for heating water for steam boilers, and for other purposes, and for an improved vaccum valve to prevent collapse.	2430	8th Sept. 1870	James Eastwood.
Steam-engines - - - - - - (*washing out saline deposits.*) (*Communicated by John Houpt.*)	2678	10th Oct. 1870	William Robert Lake.
Preventing incrustation and corrosion of steam-boilers and other vessels. - - - (*Communicated by James Charles Adolphus Dick.*)	3402	31st Dec. 1870	Edward Primerose. Howard Vaughan.
III.—Water-feeding Apparatus for Boilers; Heating Feed-water.			
Apparatus for drawing or raising and forcing liquids.	133	15th Jan. 1870	Francis George Fleury.
An improved apparatus for feeding steam-boilers with water. (*Communicated by Matthew Whytlaw and Duncan Sim.*)	226	25th Jan. 1870	Robert Adam Whytlaw.
Improvements in furnace grates and in apparatus connected therewith, for heating water for steam boilers, and other like purposes. (*Communicated by Charles Emery Hutson.*)	235	26th Jan. 1870	William Robert Lake.
Feed water heaters for steam generators - -	548	24th Feb. 1870	William Brown. Charles Neale May.
An improved apparatus for feeding or supplying steam generators with water, which said apparatus is applicable to the raising and forcing of water and other liquids. (*Communicated by Camille Faure.*)	608	2nd March 1870	Thomas Brown.
Improved apparatus for generating steam or elastic vapours, for actuating motive-power engines. (*Communicated by Jean Baptiste Givord.*)	691	8th March 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STEAM-BOILERS, &c.—*continued.*			
Improved apparatus for indicating a deficiency of water in steam-boilers and for regulating the supply of water thereto. (*Communicated by Rufus Nutting Pratt and Robert Berryman and Francis A. Pratt and Samuel Coit.*)	744	14th March 1870	William Robert Lake.
Steam-boilers or generators - - - (*heating feed water.*)	868	24th March 1870	Edwin Cambridge.
A new or improved arrangement of apparatus for forcing and projecting liquids or fluids and raising the temperature of the same. - -	996	5th April 1870	James More. William Leckie Graham Wright.
Water-feeding apparatus for boilers - - -	1103	14th April 1870	Paul Narcisse Joseph Macabies.
Steam engines and boilers - - -	1341	11th May 1870	Thomas William Wedlake.
An improved apparatus to be employed in the filling of water carts with water. (*tenders to steam engines.*)	1392	16th May 1870	Charles Wicksteed, junior.
Steam-boilers - - - - - - (*Communicated by John Benjamin Root.*)	1675	9th June 1870	William Edward Newton.
New or improved constructions and arrangements of valves and their actuating parts, and their application to steam-boilers and engines, suitable also for other purposes.	1815	27th June 1870	David Rowan.
Steam-generators - - - - - (*Communicated by Henry Petitpierre.*)	1843	28th June 1870	Alexander Melville Clark.
Means of producing and regulating motive power -	1859	30th June 1870	John Bourne.
Improved means of supplying boilers with water -	2014	16th July 1870	Arthur Jackson.
An economical method of heating water before using it in the service of steam boilers of any kind.	2110	27th July 1870	William New.
Improvements in furnace grates and in apparatus connected therewith for heating water for steam boilers, and for other like purposes. (*Communicated by Charles Emery Hutson.*)	2112	27th July 1870	William Robert Lake.
An improved feed-water apparatus for steam-boilers.	2136	30th July 1870	Jan Wozniakowski.
Means and apparatus for working brakes for the rolling stock of railways and tramways, as also for working feed-water pumps in connection therewith. (*Communicated by George Westinghouse, junior.*)	2235	11th Aug. 1870	Charles Denton Abel.
Water heaters and feeders - - - -	2334	25th Aug. 1870	Alfred Alexander. David Lansley.
Steam-engines - - - - - (*feed-water heater.*)	2380	31st Aug. 1870	William Rudd Oswald. William Kenmire Swaddle.
Improvements in apparatus for heating water for steam boilers and for other purposes, and for an improved vacuum valve to prevent collapse.	2430	8th Sept. 1870	James Eastwood.
Construction of firebars and for the employment of them for heating the feed for generating steam, and for keeping the bars cool.	2459	12th Sept. 1870	Charles Stephens.
Production of motive-power and appliances connected therewith. - - -	2729	17th Oct. 1870	George Bell Galloway. George Thomas Galloway.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STEAM-BOILERS, &c.—*continued.*			
An improved automatic boiler feeding apparatus -	3024	18th Nov. 1870	John Grindrod.
Means or apparatus for preventing steam-boiler explosions. (*automatic water feeder.*)	3043	21st Nov. 1870	Edouard Langlet.
Apparatus for injecting or otherwise propelling liquids.	3129	29th Nov. 1870	Robert Sinclair.
Apparatus for injecting and ejecting fluids - (*Communicated by Alexander Friedmann.*)	3225	8th Dec. 1870	John Clayton Mewburn.
Improved means or apparatus for economising fuel (*heating feed-water.*)	3365	24th Dec. 1870	Andrew Bell.
A new system of railway adapted for the traffic of crowded streets of cities or towns or other places, of carriages for such railway, and means for propelling and stopping the same, part of which is applicable to the ordinary railway system. (*filling boilers with hot water.*)	3386	28th Dec. 1870	William Robertson.
Improvements in steam generators and in furnaces therefor. (*introducing feed water.*) (*Communicated by S. Lloyd Wiegand.*)	3390	29th Dec. 1870	William Robert Lake.
Improvements in hydraulic breaks for railway rolling stock, partly applicable to the supplying of the tender or feed tank with water.	3395	30th Dec. 1870	George Pearson Renshaw.
Preventing incrustation in and corrosion of steam-boilers and other vessels. (*feed water heaters.*) (*Communicated by James Charles Adolphus Dick.*)	3402	31st Dec. 1870	Edward Primerose Howard Vaughan.
STEAM-ENGINES (*Stationary, Locomotive, and Marine*).			
A new and improved system of constructing railroads with jaunting cars and posts and rail ways.	88	12th Jan. 1870	Henry Temple Humphreys.
Steam-engines applicable for marine and other purposes. - - - - - -	96	12th Jan. 1870	William Denison. Henry Teall.
Improvements in steam-engines and in the boilers and furnaces to be used therewith.	166	19th Jan. 1870	Edward Wood.
Steam-engines - - - - - -	179	20th Jan. 1870	William Lawrence Wildy.
Steam-engines - - - - -	230	25th Jan. 1870	William Scott Underhill.
Motive-power engines and steam generators to be used therewith, suitable for domestic purposes. (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johnson.
Obtaining motive-power by means of steam -	311	2nd Feb. 1870	William John Hodge. John William Greayer.
Improvement in railways and in rolling stock to be used therewith.	388	10th Feb. 1870	Henry Temple Humphreys.
Slide valves - - - - - -	411	11th Feb. 1870	James Smart.
Improved safety apparatus for locomotives and brake wagons.	454	16th Feb. 1870	Laurence Hill.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STEAM-ENGINES—*continued.*			
Railways, tramways, common roads, and machines and vehicles to run thereon.	512	22nd Feb. 1870	William Bridges Adams.
A new and useful improvement in steam-engines (*Communicated by Guillaume Marie Henri Audemar.*)	541	24th Feb. 1870	Henri Adrien Bonneville.
Steam-boilers and engines (*Communicated by Francis Brown Blanchard.*)	549	24th Feb. 1870	William Edward Newton.
Compound marine engines	559	25th Feb. 1870	Thomas Blackwood.
A new or improved rotary engine	584	28th Feb. 1870	Abraham Ripley.
An improved apparatus for producing rotary motion.	615	2nd March 1870	Charles Ernest de Lorière.
Improvements in the application of power for the propulsion of vehicles on common roads or railways, and in apparatus connected therewith. (*Communicated by Henri Adolphe Corbin.*)	664	5th March 1870	Alexander Melville Clark.
Certain improvements in elastic rolls or tubing for clothes wringers and various other purposes, as well as in machinery for manufacturing the same. (*using fibrous strands as packing for pistons.*)	786	16th March 1870	Joel Moulton.
An improved lubricating apparatus for lubricating the slide valves and cylinders of steam-engines.	829	21st March 1870	John Ferris.
An improved method of counteracting the pressure on the slide valves of steam or other engines. (*Communicated by William Myrtle Williams.*)	845	22nd March 1870	William Robert Lake.
Steam-engines	873	25th March 1870	Alexander Baumann.
Improvements in the valves of steam-engines and in the mechanism for operating the same. (*Communicated by George Enoch Noyes.*)	885	25th March 1870	William Robert Lake.
Lubricators (*for steam cylinders.*)	938	31st March 1870	Charles Dudley Austin.
Utilizing exhaust steam (*preventing back pressure on the piston.*)	976	2nd April 1870	Joseph Shackleton.
Equilibrium valves	977	2nd April 1870	Charles Wilson, John Peebles.
Improvements in steering gear, and in machinery for starting, stopping and reversing heavy steam-engines and turrets, and for discharging cargo.	1018	7th April 1870	Andrew Betts Brown.
Construction of agricultural road traction and portable steam-engines and tramway locomotives.	1037	8th April 1870	Thomas Aveling.
Rotary engines and pumps	1056	11th April 1870	George Henry Ellis.
Certain improvements in steam and other elastic fluid engines.	1063	12th April 1870	Robert Wilson.
Means for producing motive-power (*and packing.*)	1066	13th April 1870	Robert Madge Marchant.
Construction of engines worked by steam or other motive-power.	1096	14th April 1870	William Simpson, Alfred Gardner.
Steam-engines	1131	19th April 1870	John Frederick Spencer, William Inglis.
An improved device for operating the throttle valve or regulator in locomotive engines, and for other like purposes. (*Communicated by Henry Leffert Brevoort.*)	1145	19th April 1870	Alfred Vincent Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STEAM-ENGINES—*continued.*			
Slide valves	1147	19th April 1870	James Grafton Jones. George William Elliott.
Condensers for marine steam-engines (*Communicated by John Houpt.*)	1152	20th April 1870	William Robert Lake.
Steam-engines	1212	27th April 1870	Eustace Wigzell. Joseph Pollit.
Construction of oscillating cylinder engines	1216	27th April 1870	Henry Edward Curtis.
Combined high and low pressure steam and atmospheric engines.	1251	2nd May 1870	Thomas Paton. Thomas Winder.
Traction and locomotive engines (*Communicated by James K. Lake.*)	1270	3rd May 1870	Alexander Melville Clark.
Steam carriages for common road locomotion (*see* "CARRIAGES.") (*Communicated by Jean Baptiste Gabriel Marie Frederic Piret.*)	1273	3rd May 1870	Alexander Melville Clark.
Steam-engines (*Communicated by Messrs. Babcock and Wilcox.*)	1286	5th May 1870	William Robert Lake.
Rotary engines	1321	9th May 1870	Edwin Whitworth.
Steam engines and boilers	1341	11th May 1870	Thomas William Wedlake.
Construction of steam valves or cocks (*Communicated by George Snowden Redfield, Edward Abraham Rock and James Seel Gill.*)	1357	12th May 1870	William Edward Newton.
An improved steam machine for agricultural work and land transport of every kind. (*Communicated by Jean Baptiste Honoré Petitpierre.*)	1365	13th May 1870	William Edward Gedge.
Manufacture of bearings, slides and packings for steam-engines and other machinery. (*Communicated by Eliza Dexter Murfey.*)	1401	16th May 1870	John Henry Johnson.
Steam pumping or blowing engines (*Communicated by James Riley Maxwell and Ezra Cope.*)	1413	17th May 1870	Martin Benson.
Steam-engines (*Communicated by Benoit Louchart.*)	1444	19th May 1870	William Edward Gedge.
Construction and arrangement of valves for regulating the supply or discharge of steam, water and other fluids.	1472	21st May 1870	Thomas Holt Lloyd.
Improvements in the construction of tramways, and in engines and carriages employed thereon.	1475	21st May 1870	Edward Ellis Allen.
Steam and other valves	1477	21st May 1870	Henry Hind. George Wells.
Motive-power engines	1504	24th May 1870	John Yule.
An improvement in steam-engines	1550	27th May 1870	James Cope.
An improved arrangement of reversing and expansion gear for steam-engines.	1646	7th June 1870	Thomas Aveling. Henry Rawlinson.
Rotary engines and pumps	1679	10th June 1870	Robert Thomas Yeadon Johnson.
Improvements in steam and other vessels, and in steam-engines, steam-boilers and propellers applicable thereto, parts of which improvements are adapted for other purposes. (*Communicated by James Montgomery.*)	1691	11th June 1870	Benjamin Joseph Barnard Mills.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STEAM-ENGINES—*continued.*			
Slide valves	1707	14th June 1870	George Weir. James Weir.
Rotary engines	1761	21st June 1870	James Outram.
Valves applicable to steam or water pressure	1768	21st June 1870	Thomas Common Brown.
Improvements in railways and in the engines and carriages to run thereon. (*Communicated by Francois Maurice Marin.*)	1771	21st June 1870	John Henry Johnson.
Locomotive steam-engines	1778	22nd June 1870	James Reid.
Rotary engines	1779	22nd June 1870	Thomas Graham. Thomas Dixon.
New or improved constructions and arrangements of valves and their actuating parts, and their application to steam-boilers and engines, suitable also for other purposes.	1815	27th June 1870	David Rowan.
Steam-engines	1818	27th June 1870	Vincent Rastonin.
Means of producing and regulating motive-power	1859	30th June 1870	John Bourne.
Improvements in means or apparatus for measuring the flow or passage of liquids, which improvements are also applicable to obtaining motive-power.	1883	2nd July 1870	George Scott. Henry Young.
Condensers for steam-engines	1968	12th July 1870	John Walker McCarter.
Counting registers applicable to counting the revolutions of shafts in various kinds of machinery, steam and other engine indicators for registering stroke or travel indicators for gas or water meters, clocks, adding machines and registering devices of different kinds or for various purposes. (*Communicated by William Henry McNary.*)	1988	14th July 1870	William Edward Newton.
Steam-engines	1989	14th July 1870	James Humphrys.
Rotary engines	2010	15th July 1870	Richard Dudgeon.
Rotary engines	2066	23rd July 1870	Bertie Charles Scott.
Steam-engines	2168	3rd Aug. 1870	George Warsop.
Steam-engines	2184	5th Aug. 1870	Max Eyth.
Means and apparatus for working brakes for the rolling stock of railways and tramways, as also for working feed-water pumps in connection therewith. (*Communicated by George Westinghouse, junior.*)	2235	11th Aug. 1870	Charles Denton Abel.
Rotary engines	2277	17th Aug. 1870	Charles Menzies Holland.
Improvements in motive-power engines, which improvements are also in part applicable as brakes and dynamometers.	2285	18th Aug. 1870	Thomas Ivory.
Certain improvements in diminishing valves for steam and other purposes.	2315	23rd Aug. 1870	Squire Farron.
Steam-engines	2330	31st Aug. 1870	William Rudd Oswald. William Kenmire Swaddle.
Steam and gas engines	2383	1st Sept. 1870	Isham Baggs.
Steam, gas and air engines	2437	9th Sept. 1870	George Henry Ellis.
Cut-off valve gear for steam engines (*Communicated by Daniel Frank Mosman.*)	2528	20th Sept. 1870	David Hunter Brandon.
Improvements in steam, air and gas, and in fluid or hydraulic engines.	2554	23rd Sept. 1870	William Firth.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STEAM-ENGINES—*continued.*			
An improved lubricating apparatus for lubricating the slide valves and cylinders of steam engines.	2558	23rd Sept. 1870	John Pardoe Ferris.
Locomotive engines and tenders - -	2588	29th Sept. 1870	Robert Elsdon.
New or improved modes of and means or apparatus for utilizing the power and heat of the steam used in motive-power engines and for other purposes. (*Communicated by Treat Timothy Prosser.*)	2608	1st Oct. 1870	William Richard Middlemore Thomson.
Working of locomotive engines - -	2612	1st Oct. 1870	Joseph Ward.
Motive-power engines - - - -	2619	1st Oct. 1870	John Yule.
Direct-acting steam engines - - -	2657	7th Oct. 1870	Herbert Vosper.
Steam-engines - - - - - (*Communicated by John Houpt.*)	2678	10th Oct. 1870	William Robert Lake.
Single cylinder, steam or other motive-power engines.	2684	11th Oct. 1870	James Shand.
Production of motive-power and appliances connected therewith. - - -	2729	17th Oct. 1870	George Bell Galloway. George Thomas Galloway.
New or improved constructions of elastic and flexible metallic or composite packings for the stuffing boxes and other working and jointing parts of steam engines and machinery.	2760	20th Oct. 1870	William Paton.
Steam-engines - - - -	2871	1st Nov. 1870	William Dawes.
Machinery and apparatus for tilling land by steam and for other purposes.	2904	3rd Nov. 1870	Samuel Oram.
Improved methods of and apparatus for utilising the waste and spare or live steam, waste and spare heat, and waste and spare momentum of locomotive and other steam engines.	2906	3rd Nov. 1870	Thomas Arthur Dillon.
An improved steam machine for agricultural work and land transport of every kind. (*Communicated by Jean Baptiste Honoré Petitpierre.*)	2964	11th Nov. 1870	William Edward Gedge.
Certain improvements in engines worked by steam and other elastic fluids and in valves. - -	3176	3rd Dec. 1870	George Holcroft. William Nathan Dack.
Portable and other steam-engines - -	3186	3rd Dec. 1870	Edward Rush Turner.
Application of engine and other power to duplicate machines connected by a side rod.	3244	10th Dec. 1870	John Cooke.
Slide valves for steam and other engines - -	3336	21st Dec. 1870	Joseph Crichton Black.
Construction of equilibrium slide valves -	3350	22nd Dec. 1870	Francis Jackson.
Improvements in the slide valves of steam and other motive-power engines and in apparatus connected therewith. - - -	3355	22nd Dec. 1870	James Marshall. William Bishop Harding.
Improvements in machinery for stamping and breaking ores and separating the same from substances with which they may be combined, parts of which improvements are also applicable in the construction of steam hammers and steam-engines. - - - -	3357	23rd Dec. 1870	James Willoughby. William Willoughby. Joseph Willoughby. Samuel Willoughby.

See also "GAUGES." "GOVERNORS."

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STEERING OR GUIDING SHIPS, CARRIAGES, PLOUGHS, &c.			
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion. (*steering ships by twin propellers.*)	175	20th Jan. 1870	James Maze Kilner.
An improved appliance for facilitating the working of bicycles and tricycles. (*facilitating steering.*)	209	22nd Jan. 1870	Archibald Samuels Campbell.
Improvements in the construction of ships or vessels and in bolts and nuts for fastening the parts together, also in the construction and employment of apparatus to be applied to such ships or vessels to assist in steering and propelling them through intricate channels.	237	26th Jan. 1870	Charles Lungley.
Velocipedes - - - - (*steering or guiding.*)	363	8th Feb. 1870	Arthur Field. Edwin Badger.
Improved means or apparatus for controlling and guiding the movements of torpedo boats, rams and other similar vessels. (*Communicated by John Archibald Ballard.*)	382	9th Feb. 1870	Thomas James Smith.
Improvements in ploughing and in ploughing implements.	491	19th Feb. 1870	Thomas Reid.
Improved arrangements for applying steam power in cultivating land. (*guiding.*)	601	1st March 1870	Robert William Thomson.
Propellers for ships or other navigable vessels - (*and steering.*)	641	4th March 1870	William Tyrer.
Improvements in the construction of two-furrow ploughs and in other tilling implements. - (*steering gear.*)	798	17th March 1870	James Davis. William Nash Davis.
Improved means and apparatus for guiding ploughs and also for regulating the depth of working of the same.	811	18th March 1870	William Woofe.
Improved apparatus for steering ships - - (*Communicated by James Porter and Herbert Perkins.*)	921	30th March 1870	Thomas Allen Hickley. William Utting.
Improvements in velocipedes, parts of which improvements are applicable to machinery generally. - - - - - - (*mounting the steering wheel.*)	979	2nd April 1870	Alfred Milnes Hobson. Edward Cozens Smith.
Improvements in steering gear and in machinery for starting, stopping and reversing heavy steam engines and turrets, and for discharging cargo.	1018	7th April 1870	Andrew Betts Brown.
Ploughs - - - - - - (*steering the leading wheels.*)	1071	12th April 1870	James Howard.
Velocipedes - - - - (*Communicated by Charles Dopping Irvine.*)	1094	14th April 1870	Joseph Plaskitt.
Steering or manœuvring ships and other vessels -	1307	7th May 1870	Frederick Robert Augustus Glover.
Steering tell-tales for vessels - - -	1327	10th May 1870	Edward Augustus Inglefield.
Stuffing boxes - - - - (*applicable to rudder heads.*)	1380	14th May 1870	Charles Ross Simey.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STEERING, &c.—*continued.*			
Rudders for vessels - - - - (*Communicated by Stephen Gano Coleman.*)	1696	13th June 1870	William Robert Lake.
Improved combinations of screw propellers and steering apparatus for navigable vessels.	1721	16th June 1870	William Ashley Clayton.
Ploughs - - - - - - (*turning at the headland.*)	1841	28th June 1870	Thomas Corbett.
Agricultural drills - - - - (*steering.*)	1931	7th July 1870	John Hensman. William Armstrong.
Ships' logs - - - - -	2020	18th July 1870	Henrik Ramsten.
Construction of double-furrow ploughs - - (*steering or guiding.*)	2026	19th July 1870	Robert Sellar.
Life-boats - - - - - (*Communicated by Robert Humble.*)	2498	16th Sept. 1870	William Robert Lake.
Agricultural drills - - - - (*steering gear.*)	2555	7th Oct. 1870	Samuel Randall. John Randall.
Improved arrangements for applying compressed air or other fluid to propel omnibuses or vehicles on railways, tramways or common roads, and in part applicable otherwise. - - - (*steering apparatus.*)	2733	17th Oct. 1870	David Laidlaw. John Thomson.
Propulsion and guidance or steerage of velocipedes and boats.	2770	20th Oct. 1870	Isaac Farrell.
Ploughs - - - - - (*arrangement for steering.*)	2847	29th Oct. 1870	Richard Hornsby. James Edwin Phillips.
An improved steam machine for agricultural work and land transport of every kind. (*shifting position laterally.*) (*Communicated by Jean Baptiste Honoré Petitpierre.*)	2964	4th Nov. 1870	William Edward Gedge.
Velocipede carriages and vehicles - - (*guiding.*)	3077	24th Nov. 1870	Sidney Johnson.
Steering apparatus - - - -	3192	5th Dec. 1870	Henry Jarman. John Salter.
STONE AND SLATE, ARTIFICIAL STONE AND MARBLE; GRINDSTONES AND MILLSTONES.			
Mill bills - - - - - (*for dressing millstones.*)	276	31st Jan. 1870	Thomas Lee. William Lee. Edward Lee.
Improved machinery for cutting, dressing or working stone. (*Communicated by Carl Friedrich Schlickeysen.*)	327	4th Feb. 1870	Henry Edward Newton.
Apparatus or machinery to be employed for facing, grooving or otherwise preparing blocks of stone, portions thereof being also applicable for other purposes.	429	14th Feb. 1870	Thomas Taylor Lingard.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STONE, &c.—*continued.*			
Machinery or apparatus for dressing or working stone.	468	17th Feb. 1870	William Brass. Pinder Hackworth.
Machinery or apparatus for breaking or reducing stones, and for crushing quartz or schist bones, emery, ores and all mineral and other substances.	497	19th Feb. 1870	Ferdinand Oliver Camroux. George Oliver.
Improvements in dressing stone, and in the machinery or apparatus employed therefor.	518	22nd Feb. 1870	William Adams.
Machinery for excavating coal, stone and other minerals and for compressing air. (*see* "MINING.")	571	26th Feb. 1870	Samuel Firth. Frederick Hurd.
Millstone picks	698	9th March 1870	William Oldfield Wilson.
Improvements in enamelling stone and articles composed of burnt clay, and in the enamel to be employed therein.	712	10th March 1870	Thomas West Walker.
Machinery or apparatus for cutting or dressing stone.	803	18th March 1870	Robert Girdwood.
Mill bills or chisels and picks for dressing millstones, marble or other stones.	858	23rd March 1870	James Charles Cushion.
Improved means and apparatus for regulating the driving of millstones. (*Communicated by William Charlton Harrison.*)	891	26th March 1870	Thomas James Smith.
An improved method of preparing or treating cements for the purpose of rendering them applicable for the production of artificial stone and architectural ornaments. (*Communicated by Robert Parish Busk.*)	998	5th April 1870	Charles James Busk.
An improved millstone dress (*Communicated by John Fairclough.*)	1042	8th April 1870	John Fairclough.
Filters (*composition or porous stone.*) (*Communicated by Frederick C. Krause.*)	1062	13th April 1870	Charles Joseph.
Apparatus for dressing and furrowing millstones	1120	16th April 1870	James Lee Norton.
Improvements in reaping and mowing machines, and in apparatus for sharpening the cutters of such machines. (*grindstone.*) (*Communicated by Auguste Bernard Albaret.*)	1165	21st April 1870	John Henry Johnson.
Stone-cutting apparatus	1202	26th April 1870	Sir William Fothergill Cooke. George Hunter.
Improvements in the manufacture of artificial stone and in the manufacture of vessels for containing or conveying acids or acid vapours or heated air or gases.	1233	29th April 1870	Frederick Ransome.
Improved machinery for cutting slate, marble and other like materials.	1234	29th April 1870	Henry Edward Curtis.
Apparatus for breaking and crushing stones for use in macadamizing roads, for railway ballast, for employment in the manufacture of béton of French concretion or mortar, and for producing sand or gravel of various degrees of coarseness. (*Communicated by Claude Leon Desmolins.*)	1239	30th April 1870	Arthur Charles Henderson.
Hardening, preserving and facing stone, chalk, brick and other building materials.	1494	24th May 1870	Henry Cockburn Milne Ximenes. Edward Betincourt.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STONE, &c.—*continued.*			
Apparatus for grinding or polishing plate glass, or slabs of slate, stone, marble or other substances.	1545	27th May 1870	Peter Graham Buchanan Westmacott.
Means and apparatus for cutting type, and carving, moulding and ornamenting wood, metal, stone and other materials. - -	1776	22nd June 1870	William John Cunningham. Alphonso Dabb.
Improvements in the manufacture of artificial stone and in articles composed thereof.	1822	27th June 1870	William Bennet Adamson.
Improved apparatus for dressing stones to be employed for decorticating grain or seeds. (*Communicated by Charles Golay.*)	1873	2nd July 1870	John Henry Johnson.
Dressing or cutting millstones - - -	1884	4th July 1870	Edward Copeland Stiles. John Fenn Elsdon.
Improvements in pneumatic stamps and hammers, also applicable to machinery for driving piles, cutting, splitting or dressing stone, and for boring rocks.	2011	16th July 1870	William Husband.
Formaton of roadways, pavements and such like surfaces. (*compound of asphalte, gravel, clay, &c.*) (*Communicated by Henry Hughes.*)	2030	19th July 1870	John Edward Hughes.
Cutting, boring, grinding and pulverizing stone and other hard substances. (*Communicated by Benjamin Chew Tilghman.*)	2147	1st Aug. 1870	Alfred Vincent Newton.
A machine for striking blows by hammers, and for drilling holes in rock, stone, and other hard substances.	2170	4th Aug. 1870	Ingleby Thomas Miller.
Machinery for cutting and shaping slate - -	2494	16th Sept. 1870	William Boggett.
Manufacture of the cutting tools or laps used by glasscutters, lapidaries and other similar handicraftsmen. - - - - - -	2795	24th Oct. 1870	John William Hoffman. Henry Eustace Fearn.
An improved silicious compound applicable for the manufacture of pipes, tiles, bricks and other articles for buildings, and for paths, floors, roofs and other analogous purposes. (*Communicated by William Augustus Battersley, Timothy Reed Crawford and Robert Brown.*)	2863	31st Oct. 1870	William Edward Newton.
Cutting, boring, grinding and pulverising stone and other hard substances. (*Communicated by Benjamin Chew Tilghman.*)	2900	3rd Nov. 1870	Alfred Vincent Newton.
Application of concrete to structures and foundations for the same, also to coffer dams. (*forming artificial stone.*)	3039	21st Nov. 1870	James William Butler.
Preparing and applying slate to useful and ornamental purposes.	3275	14th Dec. 1870	William Boggett.

For breaking stone, *see* "PRESERVING WOOD."
For breaking stone, *see* "GRINDING MINERALS."

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STRAPS, DRIVING-BANDS AND BELTS.			
An improved buckle or fastening - - (*for straps.*)	768	15th March 1870	John Beckett. Richard Levers.
Improvements in the treatment of hides and skins in tanning and otherwise utilizing all portions or pieces thereof, and in the treatment of goods already tanned. - - - - (*for mill bands, band laces, &c.*)	863	24th March 1870	Henry Richardson Fanshawe. William Henry Smith.
Fastenings for braces, belts, bands and straps -	924	30th March 1870	Joseph Cofield.
An improved strap fastener - - - (*Communicated by William Sparks Thomson.*)	1008	6th April 1870	Alexander Horace Brandon.
Manufacture of leather for mill bands - - (*Communicated by Henry Klemm and Charles Klemm.*)	1662	8th June 1870	Edward Moss.
Manufacture of leather for picking bands, lathes and other articles requiring leather of an extraordinary toughness, durability and strength. (*Communicated by Messieurs Klemm, Brothers.*)	2210	9th Aug. 1870	Edward Moss.
Improvements in scutching flax and other fibrous substances and in the machinery or apparatus employed therefor. (*grooved or fluted belts.*)	2341	25th Aug. 1870	Christopher Robson.
Apparatus or appliances for saving life from fire - (*construction of belt.*)	2348	26th Aug. 1870	William Riddle.
Connecting the ends of straps or belts - -	2495	16th Sept. 1870	Eli Howarth.
Wool-combing machines - - - (*drawing belts.*)	2538	22nd Sept. 1870	Isaac Bailey.
Improved means or apparatus for putting driving straps upon drums or pullies when in motion. (*see* "GOVERNORS.")	2601	30th Sept. 1870	John Proven.
Improved self-acting machinery for opening, smoothing, spreading and guiding calico, cloth and other fabrics for the use of bleachers, dyers, calico printers and others. (*endless bands or chains.*)	2610	1st Oct. 1870	William Birch.
Improvements in the manufacture of boots and shoes or other coverings for the feet, parts of which improvements are also applicable in the manufacture of millstraps or bands, harness, hose pipes and other similar articles, and in the machinery, apparatus or means to be used for effecting such purposes.	2698	12th Oct. 1870	Thomas White.
Improvements in apparatus and in the manufacture of leather laces and strips.	2883	2nd Nov. 1870	Thomas Saunderson.
Sewing machines - - - - (*for leather strapping.*) (*Communicated by David Whittemore.*)	3183	3rd Dec. 1870	Edward Thomas Hughes.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
STRAW MATS AND THATCH.			
Thatch-making machinery - - -	2219	10th Aug. 1870	Osborne Reynolds.
STRING BOXES AND REELS.			
Improved apparatus for holding and delivering twine or cord.	2546	22nd Sept. 1870	Henry Jones.
SUGAR AND SYRUPS; GLUCOSE.			
Processes for the purification of saccharine syrups (*Communicated by Alexandre Auguste Perier, Antoine Louis Possoz and Jean Francois Cail.*)	26	4th Jan. 1870	John Garrett Tongue.
Sugar cane mills - - - -	42	5th Jan. 1870	Louis Carl Wilhelm Schütte.
Manufacture of sugar - - - - (*Communicated by Emile Rousseau.*)	98	12th Jan. 1870	William Edward Newton.
Preparation of animal charcoal for use in treating saccharine solutions.	203	22nd Jan. 1870	William Thurston Waite.
Improvements in filtering saccharine solutions and other liquids and in means or apparatus employed therein.	204	22nd Jan. 1870	William Thurston Waite.
Preparation of fermentable saccharine matters -	205	22nd Jan. 1870	William Garton.
An improved method of extracting juices from plants and of separating liquid or soluble matter from solids. (*sugar.*) (*Partly communicated by Julius Robert.*)	219	24th Jan. 1870	Ferdinand Kohn.
An improved mode of and apparatus for revivifying animal charcoal. (*Communicated by Doctor Herrmann Eipfeldt and Camillo Thumb.*)	309	2nd Feb. 1870	William Robert Lake.
Machinery or apparatus for pressing spent hops, grains, beetroot or other substances used in the processes of brewing and distilling to extract liquor or moisture therefrom. - -	389	10th Feb. 1870	Charles Pontifex. Frederick Pontifex. Anthony Sherwood.
Apparatus for drying sugar - - (*Communicated by Alexander Herbst.*)	415	11th Feb. 1870	William Robert Lake.
Improved apparatus for injecting and reducing liquids to a state of spray or minute subdivision. (*for concentrating sugar juice.*) (*Communicated by Alcide Sanial Du Fay.*)	673	7th March 1870	William Edward Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SUGAR, &c.—*continued.*			
Improvements in or applicable to centrifugal drying machines or hydro-extractors. (*for drying sugar.*)	679	8th March 1870	George William Wigner.
An improved apparatus for the manufacture of sugar (*Communicated by Wilson Hardy.*)	731	11th March 1870	John Connell.
Improvements in obtaining and applying iron and manganese protoxides or their carbonates, in obtaining and applying baryta, strontia and salts thereof, in obtaining potash, soda and sulphur, and in utilizing bye or "waste" products arising in the manufactures of chlorine, copper and alum. (*baryta for use in sugar manufacture.*)	881	25th March 1870	Joseph Townsend.
Apparatus for evaporating sugar - - - (*Communicated by José Guardiola.*)	923	30th March 1870	Henry Berthon Preston.
Apparatus for drying grain, malt, roots, spent malt or hops, megass or spent sugar cane, wool and other substances.	966	2nd April 1870	Henry Jackson.
Apparatus for washing and treating pulps - - (*for making beetroot sugar.*) (*Communicated by Louis Joseph Amedée Lespermont.*)	994	5th April 1870	Alexander Melville Clark.
Treatment of maize - - - - - (*producing sugar.*) (*Communicated by H. Cavayé and Company.*)	1288	5th May 1870	John Henry Johnson.
Preparing, clarifying and preserving vegetable juices and other liquids. (*saccharine solutions.*)	1371	13th May 1870	James Heddle.
An improved thermo-press - - - - (*for extracting juice from beetroot.*)	1558	27th May 1870	Ferdinand Tommasi.
Improvements in apparatus applicable to the conversion of cereal and vegetable substances into saccharine matter, in treating and purifying saccharine substances obtained from starch, malt, fruits and vegetables, in treating fatty matters, and in the manufacture of chemical products.	1562	28th May 1870	Alexandre Manbré.
Improvements in desiccating sugar-cane refuse (known as megass, bagassa or trash) and in the apparatus or means employed therefor. - -	1628	4th June 1870	James Buchanan Mirrlees. William Renny Watson.
Manufacture of leather for mill bands - - (*use of sugar of grapes.*) (*Communicated by Henry Klemm and Charles Klemm.*)	1662	8th June 1870	Edward Moss.
A new or improved bleaching agent, also applicable for other purposes, together with the mode of and apparatus for producing the same. (*applicable for sulphuration of syrups.*)	1770	21st June 1870	Daniel Collet.
Production of glucose, syrup and sugar - - (*Communicated by Jean Jacques Grosheing.*)	1821	27th June 1870	William Edward Newton.
Improvements in evaporating and boiling or concentrating liquids and in apparatus employed therein. (*Communicated by Jean Francois Cail.*)	1900	5th July 1870	John Henry Johnson.
Kilns employed in the manufacture and reburning of animal charcoal. - - - - -	1935	8th July 1870	James Buchanan. Samuel Vickess.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SUGAR, &c.—*continued.*			
Preparing charcoal for decolorizing syrups and other solutions.	2049	20th July 1870	George Phillips.
Improvements in the extraction of juice from sugar cane, and in apparatus employed therein. (*Communicated by Jean Francois Cail.*)	2212	9th Aug. 1870	John Henry Johnson.
Improvements in the preparation of worts whereby an improved yield is obtained with a residue suitable to be employed in the manufacture of paper, also in the employment of such residue whether obtained in the preparation of worts or from other sources in the manufacture of paper. (*worts for glucose.*)	2231	11th Aug. 1870	Solomon Bennett.
Improvements in apparatus for economizing the waste heat and gases from furnaces, and in means for generating, collecting and purifying gases, such gases being applicable to various useful purposes. (*applicable for refining sugar.*)	2377	31st Aug. 1870	Thomas Atkins.
Improved machinery for cutting loaf sugar into cubes. (*Communicated by George Henry Mollers.*)	2415	5th Sept. 1870	William Edward Newton.
Apparatus for cutting sugar canes and other substances. - - - - -	2621	1st Oct. 1870	Edmund Alfred Pontifex. John Barton.
Construction of evaporating apparatus - - (*for saccharine liquors.*)	2774	21st Oct. 1870	Charles Henry Moberly.
Centrifugal drying machines or hydro-extractors - (*to separate syrup from sugar.*)	2886	2nd Nov. 1870	John Nathaniel Leesware.
Improved machinery for cutting loaf sugar - - (*Communicated by George Henry Moller.*)	3151	1st Dec. 1870	Alfred Vincent Newton.
Treating lichens or moss in order to obtain sugar or saccharine matter and spirit therefrom. (*Communicated by Henry Shield.*)	3250	12th Dec. 1870	John Clayton Mewburn.
Improvements in the mode of condensing saccharine juices, and in apparatus to be employed therein, which apparatus is applicable to evaporating other liquids.	3324	20th Dec. 1870	Robert Tooth.
SULPHUR.			
Improvements in treating sulphur, sulphide of hydrogen, pyrites and other compounds of sulphur, and in obtaining products therefrom. -	46	6th Jan. 1870	James Hargreaves. Thomas Robinson.
Improvements in the manufacture of gas and in obtaining residual products from such manufacture, and in apparatus to be used in such manufacture. (*obtaining sulphur.*)	510	21st Feb. 1870	Frank Clarke Hills.
A method of producing an improved black pigment and obtaining phosphates and other substances from the waste portions of the hop plant. (*obtaining sulphur salts.*) (*Communicated by Frederic Rotter.*)	515	22nd Feb. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SULPHUR.—*continued.*			
Improvements in obtaining and applying iron and manganese protoxides, or their carbonates, in obtaining and applying baryta, strontia and salts thereof, in obtaining potash, soda and sulphur, and in utilising bye or "waste" products arising in the manufacture of chlorine, copper and alum.	881	25th March 1870	Joseph Townsend.
An improved method of treating and utilizing some of the waste products resulting from the purifying of gas in gasworks. (*recovering sulphur.*)	1099	14th April 1870	Robert John Everett.
Improvements in the decomposition of certain metallic sulphides and in the production of alkaline compounds, also of a compound of sulphur by such decomposition.	1176	22nd April 1870	William Gossage.
Production of sulphuric and hydrochloric acids, of carbonates of potash and soda, and also of chlorine. (*Communicated by Haydn Mozart Baker.*)	2065	21st July 1870	John Henry Johnson.
Treatment of minerals and ores - - (*extracting sulphur.*) (*Communicated by Outhenin Chalandre, senior.*)	2203	9th Aug. 1870	Henri Adrien Bonneville.
SURGERY, SURGICAL INSTRUMENTS, SPLINTS AND BANDAGES, TRUSSES FOR HERNIA; ARTIFICIAL LIMBS, INVALID FURNITURE.			
Construction and manufacture of wheels for vehicles (*for Bath chairs.*)	245	27th Jan. 1870	John Howard Kidd.
Improvements in combination tools, which improvements are also partly applicable to scissors, pliers and such like instruments. (*for chirurgical operations.*) (*Communicated by Emile Granier.*)	520	22nd Feb. 1870	Alexander Melville Clark.
An improved apparatus for sub-cutaneous extractions and injections. (*Communicated by Georges Dieulafoy.*)	640	4th March 1870	William Edward Gedge.
Apparatus employed in the administration of nitrous oxide gas (or other gas that may be inhaled) for indicating the quantity at each and every inhalation. (*for use in surgery.*)	860	24th March 1870	Sunderland Mawson.
Specula for surgical purposes - -	1010	6th April 1870	Joseph Mayer.
An improved folding bed table for the use of invalids and others.	1127	18th April 1870	Thomas McIsaac.
An improved adjustable bedstead - - (*for invalids.*) (*Communicated by William Orr Reid.*)	1164	21st April 1870	Alfred Vincent Newton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
SURGERY, &c.—*continued.*			
Improvements in parlour foot-balls and other india-rubber articles, which improvements relate partly to illustrating the surfaces of such articles and partly to inflating the same. (*valve for invalid air cushions.*)	1505	24th May 1870	Thomas Jefferson Mayall.
Construction of surgical instruments known as "specula."	1700	14th June 1870	Robert Blackbee.
Fastenings for elastic stockings, stays, corsets, bandages and other articles of dress or wearing apparel.	1820	27th June 1870	John George Henry Hill.
Improvements in soldiers' litters and in trucks or ambulances connected therewith. (*Communicated by Dr. Carl Heinrich Rudolf Stanelli.*)	1908	6th July 1870	Alexander Prince.
An improved apparatus to be worn by railway travellers for lessening the effects of vibration on the spine or nervous system.	1972	12th July 1870	Samuel Putney.
Improved apparatus for assisting invalids or bed-ridden persons in or removing from beds.	2314	23rd Aug. 1870	Isaac Negus Jakins.
Preparation of fibrous materials to render them suitable for use as lint for surgical purposes.	2454	10th Sept. 1870	Theophilus Westhorp.
Machinery or apparatus for the manufacture of lint and lint bandages.	2539	22nd Sept. 1870	Samuel Shaw Brown.
Improvements in or applicable to machinery or apparatus for cutting wood to any required pattern or design. (*splints.*)	2671	8th Oct. 1870	William Ellis.
Improved apparatus for the use of invalids -	3014	17th Nov. 1870	Christopher Fabian Bower
Manufacture of lint for surgical, medical and other purposes.	3042	21st Nov. 1870	Arthur Chilver Tupper.
Bedsteads for invalids - - - (*Communicated by George Smith.*)	3349	22nd Dec. 1870	William Spence.
Improvements in medicating cotton and other fibres for sanitary and surgical purposes, and in machinery employed therein. - - -	3367	24th Dec. 1870	John Gamgee. William Henry Maitland.
An improved invalid bedstead - -	3394	30th Dec. 1870	George Glover.
TAR AND RESIN; BITUMEN.			
Obtaining products from mineral and vegetable tars and from certain of their distillates and residues.	50	6th Jan. 1870	George Shand.
Improvements in obtaining oil from carbonaceous substances, in utilising the bye-products and residues, and in making manure and moulders' blackening. (*utilising "acid tar."*)	108	13th Jan. 1870	James Greenshields.
Treatment of acid tars obtained from boghead mineral schist or petroleum. (*and obtaining tar.*) (*Communicated by Gervais Chevrier.*)	153	18th Jan. 1870	John Henry Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
TAR, &c.—*continued.*			
Improvements in the manufacture of gas and in obtaining residual products from such manufacture, and in apparatus to be used in such manufacture. (*obtaining coal tar.*)	510	21st Feb. 1870	Frank Clarke Hills.
Improvements in the construction of roads and ways and in the materials employed therein, which materials are also applicable to other purposes for which asphalt is generally employed. (*Communicated by Leopold Wiart.*)	764	16th March 1870	John Henry Johnson.
The application of a new material to the production of illuminating oils and solid hydrocarbons, suitable for the manufacture of candles and for other purposes. - - - - (*"ozokerit."*)	961	2nd April 1870	Frederick Field. Gustav Siemssen.
A new or improved hardening composition and its employment with india-rubber gums and oils. (*acid resin.*) (*Communicated by John Ballou Newbrough.*)	1155	20th April 1870	John Henry Johnson.
Improvements in the manufacture of artificial alkaloids derived from coal tar and in the preparation of salts of the said alkaloids.	1425	18th May 1870	John Casthelaz.
Construction of crucibles or pots used in the manufacture of glass and other materials. (*for melting resin, wax, &c.*)	2966	11th Nov. 1870	Edward Bolton.
An improvement in the manufacture of pavements, waterproof linings and coverings. (*bituminous compound.*)	3125	29th Nov. 1870	Henry Slingsby Bethell.
TELEGRAPHS (*Electric*); TELEGRAPHIC PRINTING APPARATUS.			
Electric telegraphs - - -	225	25th Jan. 1870	Henry Brown Greenwood.
New or improved modes and means of covering and insulating the wires of electric telegraphs.	272	31st Jan. 1870	Robert Dick.
Improvements applicable to telegraphic purposes -	274	31st Jan. 1870	Thomas Walker.
Machinery for covering telegraph wires - -	344	7th Feb. 1870	Henry Brooks. Adam Brooks. Thomas Bestwick. William Bestwick.
An improved method of constructing submarine telegraph cables for the support of insulated conductors for communicating intelligence between nations and foreign countries by electricity.	409	11th Feb. 1870	James Story.
Electric cables or conductors - - -	627	3rd March 1870	Samuel Elkens Phillips.
Construction of ships and other vessels - - (*applicable to floating telegraph stations.*)	674	7th March 1870	Frederic Wilkins.
An improved telegraph - - -	765	15th March 1870	Gustav Jaite.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
TELEGRAPHS, &c.—*continued.*			
Production of compounds containing xyloidine - (*for covering telegraph wires.*)	787	16th March 1870	Daniel Spill.
Electric telegraphs - - - -	1044	8th April 1870	Cromwell Fleetwood Varley.
Telegraphic apparatus - - - (*Communicated by Societé Digney, frères.*)	1072	12th April 1870	Michael Henry.
Improvements in the manufacture of ropes or cables to be used for telegraphic or other purposes, and in machinery for producing such cables or ropes.	1192	25th April 1870	George Fenwick.
Apparatus for recording electric telegraph signals -	1301	6th May 1870	Warren Thompson.
Means for writing and telegraphic purposes - (*Communicated by Malling Hansen.*)	1385	14th May 1870	Peter Jensen.
Magneto-electric telegraphic apparatus - -	1445	19th May 1870	Geminiano Zanni.
Constructing a cylindrical iron kerb for the reception, repairing and maintaining telegraph wires.	1574	30th May 1870	William Beamish.
Compounds for insulating telegraph wires, the manufacture of flexible tubing and other like purposes.	1626	4th June 1870	Daniel Spill.
Printing telegraph apparatus - - - (*Communicated by Elisha Whittelsey Andrews and George Baker Field.*)	1657	8th June 1870	William Robert Lake.
An improved mechanical recorder - -	1808	25th June 1870	Julius Sax.
Improvements in telegraphy and in apparatus to be used therefor.	1855	30th June 1870	Augusto Guattari.
Electric telegraph instruments - -	1861	30th June 1870	Josiah Latimer Clark.
Morse telegraph apparatus - - -	1899	5th July 1870	Robert Alexander Novare.
An improved submarine hydro-electric telegraph cable.	1915	6th July 1870	Ferdinand Tommasi.
Manufacture of marine telegraph cables - -	2367	29th Aug. 1870	Matthew Gray. Frederick Hawkins.
Mechanical telegraphs and liquid to be used therewith, which fluid is also applicable as a power transmitter for other purposes, for the making of liquid joints and other purposes where it is desirable to use a liquid that does not readily congeal or evaporate. - - - (*see* "SIGNALS.")	2384	1st Sept. 1870	Charles Henry Chadburn. William Chadburn.
Earth-boring apparatus - - - (*for telegraphic posts.*)	2512	17th Sept. 1870	William Alfred Marshall.
Manufacture of wire for electric telegraph conductors.	2525	20th Sept. 1870	James Balleny Elkington.
Electro-magnets - - - (*Communicated by Elisha Whittlesey Andrews.*)	2578	28th Sept. 1870	William Robert Lake.
A new or improved floating light-house and telegraph and life-boat station.	2625	3rd Oct. 1870	John Benjamin Stoner.
Working of galvanic batteries - - - (*Communicated by Edwin Dodd McCracken, Henry Jothan Newton, Henry Burnham Kirkland and Joseph Roderick Husson.*)	2642	5th Oct. 1870	Alfred Vincent Newton.
Improvements on electro-dynamic apparatus for keeping off thieves. - - -	2645	6th Oct. 1870	Dr. Otto Burg. August Schiebel.
Improved apparatus and fuel for facilitating the soldering of the joints of electric telegraph and other wires.	2658	7th Oct. 1870	John William Fletcher.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
TELEGRAPHS, &c.—*continued.*			
Electro-telegraphic apparatus - - - (*Communicated by Société Digney frères et Compagnie.*)	2688	11th Oct. 1870	Michael Henry.
An improved ground anchor to form the base of a straining post telegraph post, also applicable to any other purpose where great strain is required.	2775	21st Oct. 1870	James Robert Williams.
Telegraphic printing apparatus - - - (*or embossing.*)	2845	28th Oct. 1870	Richard Herring. Robert Alexander Novare.
Improvements in fast-speed electro-magnetic telegraphs, and in apparatus relating thereto. -	2897	3rd Nov. 1870	Charles Wheatstone. John Matthias Augustus Stroh.
Pneumatic telegraphs - - - (*Communicated by Edward Augustine Calahan and George Baker Field.*)	2905	3rd Nov. 1870	William Robert Lake.
Improvements in electric telegraph transmitting, receiving and recording instruments, and in clocks.	3069	23rd Nov. 1870	Sir William Thomson (Knight).
Magnetic and electric telegraph apparatus - -	3245	10th Dec. 1870	Geminiano Zanni.
Portable sustaining voltaic batteries - - (*for telegraphic purposes.*)	3308	19th Dec. 1870	Desmond Gerald Fitz Gerald.
Improvements in insulating telegraph wires and in the machinery or apparatus to be employed therein.	3314	19th Dec. 1870	Joseph Rogers.
TESTING THE STRENGTH AND QUALITY OF MATERIALS.			
Apparatus for governing or regulating the speed of motive-power engines and for indicating the power of the same. (*using as a dynamometer.*) (*Communicated by Jacques Théophkile Gautreau.*)	762	15th March 1870	John Henry Johnson.
A new or improved docimastic process and methods for the treatment of the simple sulphurets, the complex sulphurets and the arsenio-sulphurets of lead, antimony, copper and iron, as well as coppery matts and coppers containing precious metals, in order to extract silver and gold therefrom. (*Communicated by Cyprien Marie Tessié du Motay.*)	876	25th March 1870	Thomas James Smith.
Machinery or apparatus for testing strain or pressure applied to solid bodies and for other like purposes. (*Communicated by Jules Auguste Desgoffe.*)	1649	7th June 1870	William Robert Lake.
A new or improved mode of and apparatus for testing the quality of the malleable metals and alloys. (*Communicated by Gustav Bischof, junior.*)	1756	20th June 1870	Charles Denton Abel.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
TESTING, &c.—*continued.*			
Improvements in motive-power engines, which improvements are also in part applicable as brakes and dynamometers. (*dynamometers.*)	2285	18th Aug. 1870	Thomas Ivory.
Apparatus for ascertaining the breaking strain of concrete, cement and other similar blocks or bodies.	3104	26th Nov. 1870	Vitale Domenico De Michele.
TETHERING HORSES.			
An improved apparatus for tethering horses and other animals. (*Communicated by James W. Upson.*)	2388	1st Sept. 1870	George Haseltine.
THERMOMETERS, BAROMETERS, PYROMETERS, SALINOMETERS, ELECTRO-METERS; TESTING THE STRENGTH OF FLUIDS.			
Improved means and apparatus for testing petroleum and other oils.	598	1st March 1870	Thomas Rowatt, the younger.
Boiler fittings - - - - - (*indicating temperature of steam, liquids or vapours.*)	634	3rd March 1870	William Henry Bailey.
Clinical thermometers - - - -	861	24th March 1870	Thomas Paton Hawksley.
An improved method of and apparatus for securing and measuring liquids. (*and testing.*)	1117	16th April 1870	Nicholas Murphy.
An improved automatic barrel-filling apparatus - (*and drawing liquids for testing.*) (*Communicated by Seth Clinton Catlin.*)	1429	18th May 1870	William Edward Newton.
Construction of hydrometers for taking the specific gravity of fluids.	2352	27th Aug. 1870	John Samuel Linford.
Self-indicating thermometers - - -	2481	15th Sept. 1870	George Rothnie.
Improvements applicable to safes, vaults and other structures for containing valuable property and in alarm apparatus or telegraphs connected therewith. (*construction of galvanometers.*) (*Communicated by Edwin Holmes and Henry Clay Roome.*)	2876	1st Nov. 1870	William Edward Newton.
Means for testing or measuring the quality or colour of oils and other liquids.	3027	18th Nov. 1870	Robert Porter Wilson.
Barometers - - - - - -	3280	15th Dec. 1870	Thomas Telford Macneill.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
THRASHING, WINNOWING, HULLING, DECORTICATING, DRESSING, CLEANING, DRYING, STORING AND PRESERVING CORN, GRAIN, SEEDS, AND RICE.			
Improvements in discharging grain from ships and elsewhere, and in the apparatus or means employed therefor.	185	21st Jan. 1870	Matthew Anderson.
Elevators for raising and stacking straw, hay and other similar substances.	242	27th Jan. 1870	Stephen Lewin.
An improved automatic apparatus for producing carbonic acid for the manufacture of effervescing or gaseous liquids, and for the application of such liquids to various purposes. (*for purifying corn.*) (*Communicated by Anet Jaques Nadaud.*)	305	2nd Feb. 1870	William Robert Lake.
Machinery for cleaning, scouring and decorticating wheat and other kind of grain, and also for hulling, cleaning and polishing rice.	371	9th Feb. 1870	Augustus Bryant Childs.
Machinery for elevating corn, hay, straw and other agricultural produce.	432	14th Feb. 1870	William Tasker, the younger.
An improved process for cleaning, purifying, improving and preserving grain and seed.	472	17th Feb. 1870	Charles Théodore Balonchard. Louis Adolphe Dumars.
Apparatus for feeding thrashing machines	575	26th Feb. 1870	Thomas Bell. Francis Roper.
Machinery for hulling or treating grain	637	4th March 1870	Robert Young.
Improvements in treating grain and in the mechanism employed therefor.	683	8th March 1870	John Polson.
Improvements in threshing machines and in driving mechanism for the same and for other machinery. (*Communicated by George B. Hamlin.*)	701	9th March 1870	William Robert Lake.
Means of and apparatus for indicating or registering goods raised or lowered in breweries, granaries, warehouses and other buildings. (*see* "HOISTS.")	871	24th March 1870	Louis Watson. Julius Hall.
Apparatus for drying grain, malt, roots, spent malt or hops, megass or spent sugar-cane, wool and other substances.	966	2nd April 1870	Henry Jackson.
Improvements in the utilization of a certain material obtained in treating cotton seed and in machinery employed therein. (*see* "FIBRES.")	997	5th April 1870	Thomas Rose. Robert Emerson Gibson.
Machinery for treating cotton seeds (*cleansing from fibre.*)	1121	18th April 1870	William Henry Delamare.
An apparatus for the threefold purpose of curing or drying mealy and grainy stuffs, heating, cooling and mixing fluid substances and condensing gaseous ones.	1139	19th April 1870	Melchior Nolden.
Machinery for hulling cotton seeds and separating their kernals from the hulls and fibres.	1175	22nd April 1870	Henry Shaw.
Apparatus for cleaning grain and seeds (*Communicated by Frederic Wegmann.*)	1287	5th May 1870	Alfred Vincent Newton.
Apparatus for dressing, glazing and pearling rice, wheat, barley or other grain. (*Partly communicated by Eugène Barrabé.*)	1381	14th May 1870	Jean Jules Hignette.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
THRASHING, &c.—*continued.*			
Winnowing or dressing machines - -	1433	18th May 1870	George Rich Turner, the younger.
An improved machine for decorticating fruits and vegetables.	1610	3rd June 1870	John Frank Rogers.
Thrashing machines - - - -	1619	4th June 1870	Henry Brinsmead. Richard Lyons.
Improved apparatus or machinery for lifting, lowering, loading and unloading hay, corn, straw and other materials. - - - -	1666	9th June 1870	William Twaites Wright. Evan Yorath.
An improved machine for hulling coffee and rice - (*Communicated by Henry Thomas Pratt and John Carver Alden.*)	1844	28th June 1870	William Robert Lake.
An improved drying machine - - -	1850	29th June 1870	John Lightbody.
Improvements in machinery and arrangements for cleaning and reducing wheat, maize, beans, peas and other seeds into flour or semolina, part of which improvements are applicable to machinery for pulverising or reducing other substances.	1895	5th July 1870	Thomas Carr.
Improvements in bins and granaries or holders for corn and grain, and in bricks for building the same and other structures. (*Communicated by Emile Parry.*)	1946	9th July 1870	Henry Eugene Parry.
Improvements in cleaning and polishing coffee and in apparatus employed therein, applicable also to the cleaning and polishing of grain and other produce.	1979	13th July 1870	William Newell.
Improvements in the manufacture of ornamental and other twisted metal work, and in the machinery, apparatus or means employed therein. (*beater bars for thrashing machines.*)	2016	16th July 1870	Stephen Tuddenham.
Improved means for drying substances impregnated with moisture. (*grain.*)	2045	20th July 1870	Thomas Meredith Hopkins.
Dredging machines - - - - (*for conveying grain to granaries.*)	2087	25th July 1870	Jean Baptiste Ernest Defontaine.
Drying apparatus for drying agricultural, animal and chemical and commercial products.	2145	1st Aug. 1870	William Alfred Gibbs.
Apparatus for separating, cleaning, classifying coal or grain and other solid substances.	2187	6th Aug. 1870	George William Hick.
Thatch-making machinery - - - (*for haystacks.*)	2219	10th Aug. 1870	Osborne Reynolds.
Machinery for decorticating and cleaning grain -	2569	26th Sept. 1870	David Johnson.
Apparatus for drying and heating, amalgamating, moulding and compressing, more especially applicable to the manufacture of preserved coal. (*drying grain and seeds.*)	2941	8th Nov. 1870	Henry Walker Wood.
A portable apparatus for turning, airing and screening wheat and other grain, which machine is particularly applicable for the removal of dust and weevils.	2958	10th Nov. 1870	William Henry Gittins.
An improved steam machine for agricultural work and land transport of every kind. (*for thrashing.*) (*Communicated by Jean Baptiste Honoré Petitpierre.*)	2964	4th Nov. 1870	William Edward Geipel.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
THRASHING, &c.—*continued.*			
Safes or receptacles designed to serve as coal boxes, as show-cases for shops, and for other like purposes. (*corn bin.*) (*Communicated by Benjamin Richard Deacon.*)	3016	17th Nov. 1870	George Hazeltine.
Combined winnowing, screening and blowing machines.	3066	23rd Nov. 1870	John Baker.
Construction of elevators for stacking hay, corn and straw.	3073	24th Nov. 1870	William Andrews.
An improved machine for hulling, cleaning, polishing and grinding rice, wheat and other grain or seed, and for similarly treating various other substances.	3100	25th Nov. 1870	Samuel Gardiner.
An improved apparatus for mixing soils, chemical manures and other substances, either separately or together, and for mixing dry with semi-fluid substances, liquids or air. (*and drying grain, bran, &c.*) (*Communicated by Frederick Tolhausen.*)	3213	7th Dec. 1870	Henry Hammond.
Improvements in separating seeds and ground or pulverised substances, and in the apparatus or means employed therefor.	3258	13th Dec. 1870	William Walker Gibson.
Improvements in apparatus for ploughing and cultivating land by direct traction, part of which apparatus may also be used for driving thrashing and other machines.	3267	15th Dec. 1870	Thomas Wilkinson.
THREADS AND YARNS.			
Improvements in the manufacture of yarns and in the machinery or apparatus employed therein.	27	4th Jan. 1870	John Gordon, the younger.
Manufacture of gelatine capsules or transparent covers or cases for thread, cotton or other articles.	479	18th Feb. 1870	Louis Edouard Peyrounil.
An improved process for the conversion of the hard waste of flax, hemp and tow into thread or yarn.	488	18th Feb. 1870	Jonas Brown.
Improvements in the manufacture of yarns and fabrics containing horse hair, and in means or methods for shaping and utilising fabrics containing the same or analogous stiffening material.	604	1st March 1870	Henry Hayward.
Improvements in the manufacture of yarns or threads and in apparatus to be used therein.	1076	12th April 1870	Gustavus Adolphus John Schott.
Yarn holders - - - - -	1162	21st April 1870	James Milton.
Double pile fabrics - - - - (*from cow hair yarns.*)	1302	6th May 1870	Samuel Cunliffe Lister. John Robinson.
An improvement in the manufacture of sewing thread.	1326	9th May 1870	Charles Brook.
Woven and knitted fabrics and yarns - - (*Communicated by Louis Robbins and John Southmayd.*)	1661	8th June 1870	George Tomlinson Bousfield.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
THREADS, &c.—*continued.*			
Manufacture of thread for sewing, embroidery and other analogous purposes.	2109	27th July 1870	Archibald Turner.
Machinery for making banding (*thread, sewing cotton, &c.*)	2254	13th Aug. 1870	Thomas Unsworth. Edward Whalley.
Improved compositions for sizing, dressing and finishing threads, yarns, textile fabrics and paper.	3273	14th Dec. 1870	Elijah Slack.
TOBACCO AND SNUFF; CIGARS, CIGAR-HOLDERS, PIPE AND CIGAR LIGHTERS; SMOKING PIPES; TOBACCO POUCHES.			
Improvements in the spinning and manufacture of stick and roll tobacco and in the machinery therefor, parts of which are applicable to the spinning of other fibrous materials.	44	5th Jan. 1870	William Wharton.
Pipes for smoking	120	14th Jan. 1870	Edward Cottam.
Pipes for smoking tobacco	233	26th Jan. 1870	William George Robinson Penley.
Improvements in india-rubber manufactures and in tools or machinery employed therein. (*sacks for containing tobacco.*)	295	1st Feb. 1870	George Broadhurst. John Swindells. John Kershaw.
Machinery for twisting, compressing and rolling tobacco, applicable also to rolling, compressing and drawing metals.	652	5th March 1870	Elijah Robinson. Charles Frederick Robinson. James Edward Hyde Andrew.
Manufacture of cigars, cheroots, and other analogous articles.	730	11th March 1870	Louis Silberberg.
Improvements in friction lights and in apparatus to be employed therewith. (*caps used as pipe prickers, tobacco stoppers, &c.*)	755	15th March 1870	William Henry Samuel
Cases for cigars and other articles	1013	6th April 1870	George Henry James. Josiah James.
An improved spring fastening for securing purses, pocket-books, cigar cases and similar articles, and for other like purposes. (*Communicated by Mathurin Brouard.*)	1244	30th April 1870	William Robert Lake.
Improving the sanitary construction of tobacco pipes, arranged for the purpose of entirely preventing the nicotine juice from entering the mouth of the smoker, and to form means of egress for such juice.	1305	7th May 1870	William Thomas Blake. Michael Hyams.
Machines for manufacturing cigars (*Communicated by American Cigar Machine Company.*)	1438	18th May 1870	Alexander Melville Carr
Tobacco pipes and cigar holders	1459	20th May 1870	George Gatton Melbourne Hardingham.
Machinery for binding, wrapping and forming cigars (*Communicated by Socrates Scholfield.*)	1727	16th June 1870	William Edward Newton

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
TOBACCO, &c.—*continued.*			
Improvements in walking-sticks and in sticks or handles for umbrellas, parasols and sunshades, and in certain other portable articles mainly composed of wood or cane. (*snuff boxes.*)	1736	17th June 1870	Charles August Bluemel.
Construction of pipes for smoking (*Communicated by H. M. Assam.*)	1835	28th June 1870	John Frydendahl Hoffgaard.
Frames for porte monnaies, pocket books, cigar cases and similar articles. (*Communicated by Sebastien Jacobsohn and Francois Massin.*)	1893	4th July 1870	William Edward Gedge.
Means and apparatus employed in cutting various substances.	1909	6th July 1870	John Bourne.
Tobacco pipes	2252	13th Aug. 1870	Charles August Constantin Eckhold.
A novel application of stereoscopic views to match boxes and other boxes or cases. (*cigarette paper cases.*)	2408	3rd Sept. 1870	Hippolyte Fontaine.
Tobacco pipes	2450	10th Sept. 1870	James Woodawins Rhodes.
Improvements in the manufacture of "bunches" or "fillers" for cigars, and in the preparation of tobacco therefor. (*Communicated by Adolph Pearl.*)	2492	15th Sept. 1870	William Edward Newton.
Manufacture of tobacco pipes	2661	7th Oct. 1870	Josiah Glode Stapelton.
Machinery for manufacturing tobacco	2888	2nd Nov. 1870	Robert John Hilton.
Manufacture of roll tobacco, also applicable to coils of tobacco.	2895	3rd Nov. 1870	Robert James Goodbody. Matthew Joseph O'Farrell.
Improvements in the manufacture of cigars, cigarettes, and similar articles, and in the preparation of materials for the purpose.	3252	12th Dec. 1870	Frank Oscar Karuth.
TORPEDOES.			
Means and apparatus employed for exploding submarine mines or torpedoes.	2369	29th Aug. 1870	Andrew Noble.
TOYS.			
Improved apparatus in connection with the ariel top, and which is applicable to other purposes.	150	18th Jan. 1870	George Gibson Bussey.
An improved toy air-gun and projectile for the same. (*Communicated by Henry Josiah Griswold.*)	192	21st Jan. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
TOYS—*continued.*			
Improvements in parlour foot-balls and other india-rubber articles, which improvements relate partly to illustrating the surfaces of such articles and partly to inflating the same.	1505	24th May 1870	Thomas Jefferson Mayall.
Articles bearing or containing letters, characters, inscriptions or announcements, especially applicable for advertising purposes. (*or for marbles.*)	2025	18th July 1870	Charles Samuel.
An improved automatically-rotating instrument, applicable as a toy and for the diffusion of gases of combustion.	2754	19th Oct. 1870	Robert William Fraser.
An improved box or case for containing jewels, deeds and other valuables, applicable also as a toy puzzle.	3032	19th Nov. 1870	Rupert Drury.
A new or improved top - - - -	3155	1st Dec. 1870	John Clews. Frederick Clews.
TURNING ; LATHES FOR TURNING.			
Motive-power engines and steam generators to be used therewith suitable for domestic purposes. (*driving lathes.*) (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johnson.
Machinery for engine turning or engraving metallic or other surfaces. (*Communicated by Eugine Darier.*)	492	19th Feb. 1870	Ernest Hill.
Improvements in the manufacture of hollow cast-iron cooking utensils and in the means or apparatus employed therefor or connected therewith, part of which apparatus is applicable to the moulding of other articles.	696	9th March 1870	John Neilson.
Improvements in machinery for turning, shaping, cutting and boring wood and other substances, and in machinery for preparing cutters or tools for turning.	933	31st March 1870	Jonathan Sellers.
Machinery or apparatus for boring, drilling and turning wood or metal. - - -	1140	19th April 1870	David Sowden. Reuben Calvert Stephenson.
An improved process of drilling and cutting plane surfaces in the manufacture of crystal, glass or metal ware, and an improved lathe for this purpose. (*Communicated by Georges Blau.*)	1819	27th June 1870	William Edward Gedge.
Improvements in making wooden skewers, and in the machinery, apparatus and means to be employed therein. - - - (*turning or rounding.*)	1825	27th June 1870	Joseph Butterworth. John Backhouse Hutchinson.
Machinery or apparatus for reducing wood, metal or other hard material to fixed patterns. (*Communicated by Frederick Baldwin.*)	1987	14th July 1870	Giovanni Sconcia.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
TURNING, &c.—*continued.*			
Manufacture of leather for picking bands, lathes and other articles requiring leather of an extraordinary toughness, durability and strength. (*Communicated by Messieurs Klemm, Brothers.*)	2210	9th Aug. 1870	Edward Moss.
Apparatus to be applied for operating sewing and other machines. (*watch-makers' lathes.*) (*Communicated by Edward Jenner Leyburn.*)	2331	31st Aug. 1870	Alexander Melville Clark.
Slide rests for producing geometrical figures and designs. (*used with lathes.*)	2830	27th Oct. 1870	Richard Pudsey Dawson.
Improved treadle mechanism, chiefly designed for operating sewing-machines. (*or turning lathes.*) (*Communicated by George Willey.*)	3375	24th Dec. 1870	George Haseltine.
UMBRELLAS, PARASOLS, UMBRELLA FURNITURE; WALKING-STICKS.			
Construction of the frames of umbrellas and parasols	109	13th Jan. 1870	Joseph Cross.
An improved means or method of exhibiting names, photographs, views, designs or sketches in monuments, door or other knobs, boxes, walking-sticks, umbrellas and various other articles. - - - -	112	13th Jan. 1870	Joseph Wright. Joseph Cryer. Edwin Rhodes.
Manufacture of umbrellas and parasols - -	172	20th Jan. 1870	George Hatfield Gossip.
Umbrellas, parasols and sunshades - -	250	27th Jan. 1870	Orby Cicel Mootham.
Parasols and umbrellas - - -	341	5th Feb. 1870	Francis Sangster.
Frames of umbrellas, parasols and sunshades -	547	24th Feb. 1870	Richard Cook.
Umbrellas, parasols and sunshades - -	639	4th March 1870	James Raphaël.
Umbrellas and parasols - - -	931	30th March 1870	William Avery.
Supports for supporting and adjusting umbrellas, parasols and other like articles.	1267	3rd May 1870	Edward Parsons North.
Walking-sticks, and sticks for umbrellas, parasols and other analogous articles.	1334	10th May 1870	William Dangerfield.
Improvements in walking-sticks and in sticks or handles for umbrellas, parasols and sunshades, and in certain other portable articles mainly composed of wood or cane.	1736	17th June 1870	Charles August Bluemel.
An improvement in billiard and bagatelle cues - (*or walking sticks.*)	1741	17th June 1870	Thomas Greenwood. Julius Fabian.
Sunshades, tents, tent pegs and weather protectors	1802	24th June 1870	George Ritchie.
Machinery or apparatus for reducing wood, metal or other hard material to fixed patterns. (*walking sticks.*) (*Communicated by Frederick Baldwin.*)	1987	14th July 1870	Giovanni Sconcia.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
UPHOLSTERY, &c.—*continued.*			
An improved buoyant mattress, designed to serve either as a bed or a life preserver. (*Communicated by Joshua Hunt.*)	2924	5th Nov. 1870	William Robert Lake.
Machinery for manufacturing carpet lining (*Communicated by Joel Fisher Fales.*)	2939	8th Nov. 1870	Alexander Melville Clark.
Improvements in carpet linings and stair pads, and in machinery for manufacturing the same. (*Communicated by John Robinson Harrington.*)	3088	24th Nov. 1870	George Haseltine.
An improved fabric suitable for carpet linings and other purposes, and improved machinery for manufacturing the same.	3218	7th Dec. 1870	William Henry Maitland.
Application of felt in making carpets, hearth-rugs, mats, cushions and such like articles.	3333	9th Dec. 1870	Thomas Grason.
A new application of a vegetable fibre to purposes for which feathers or feather down have heretofore been used. (*for filling bed quilts.*)	3247	12th Dec. 1870	James Oldrenshaw Esq. and George Cussons, junr.
A new cloak for military and other purposes, which can also be used as a sheet or covering.	3372	24th Dec. 1870	Alexander Carlyle Bell.
Improvements in the manufacture of felted fabrics and in the machinery or apparatus employed therein. (*for carpets, druggets, rugs; seats or backs of chairs, &c.*) (*Communicated by Robert Spencer.*)	3404	31st Dec. 1870	William Edward Newton.
VALVES, TAPS, STOP-COCKS, PLUGS; REGULATING THE FLOW AND PRESSURE OF FLUIDS.			
Cocks and valves	38	5th Jan. 1870	Edmund Edwards.
An improved self-gauging and registering indicator for ascertaining the hourly, daily or periodical consumption of liquids of any kind.	68	8th Jan. 1870	Henry William Lewis.
Improved apparatus for discharging water from steam pipes.	77	11th Jan. 1870	Alexander Cochran and John Kerr.
Means and apparatus for gauging or regulating the flow of water or other liquids.	80	11th Jan. 1870	Edme Augustin Chaix.
An improved self-closing tap for drawing off liquids	86	11th Jan. 1870	Robert Doyne Davis.
A new flexible valve for regulating the flow of fluids in pipes, also used in apparatus used for the manufacture of gas.	113	13th Jan. 1870	George Thornelow.
Improvements in steam-engines and in the boilers and furnaces to be used therewith.	166	19th Jan. 1870	Edward Wood.
An improved apparatus for lubricating parts of locomotive and other engines. (*slide valves.*) (*Communicated by Pierre Freitel.*)	218	24th Jan. 1870	William Edward Gedge.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
UPHOLSTERY, &c.—*continued.*			
Certain improvements in metallic adjusters, applicable for adjusting braces, garters and other articles of dress, and which said improvements are also applicable for suspending curtains or other drapery. - - - - -	955	1st April 1870	Frederic Arthur Harrison. Charles Priestland.
Hammocks - - - - - -	1372	13th May 1870	Alexander McAlister.
Improvements in parlour foot-balls and other india-rubber articles, which improvements relate partly to illustrating the surfaces of such articles and partly to inflating the same. (*valve applied to air cushions.*)	1505	24th May 1870	Thomas Jefferson Mayall.
Furniture springs for seats, mattresses and other similar articles. (*Communicated by John Perlie Ryan.*)	1604	2nd June 1870	William Edward Newton.
Apparatus for cutting wood into small strips, filaments or shavings. (*stuffing for beds, chairs, &c.*)	1828	27th June 1870	William Riddell.
An improved waterproof fabric applicable for rugs, carpets, tents and outer coverings or wrappers.	1950	9th July 1870	Donald Nicoll.
Machinery or apparatus for reducing wood, metal or other hard material to fixed patterns. (*curtain rods, bedstead poles.*) (*Communicated by Frederick Baldwin.*)	1967	14th July 1870	Giovanni Sconcia.
Process of and machinery for cleansing and finishing carpet fabrics.	2093	25th July 1870	John Wilkinson, the younger.
Certain improvements in canopies - - - (*over beds.*) (*Communicated by Augusta Margarette Rodgers.*)	2097	26th July 1870	Henri Adrien Bouneville.
A new or improved apparatus for stretching and nailing carpets, applicable also to other useful purposes. (*Communicated by Sydney Cooke.*)	2119	28th July 1870	William James Schlesinger.
Improvements in the manufacture of twilled fabrics and in the application of such fabrics to the manufacture of various articles of wearing apparel and for upholstery purposes.	2446	9th Sept. 1870	Joseph James Barnett.
Improvements in Brussels and in tapestry carpets - (*see* "WEAVING.") (*Communicated by George Crompton.*)	2636	5th Oct. 1870	John Grrett Tongue.
Improvements in the manufacture of terry or cut-pile fabrics, and in the application of such fabrics to the manufacture of slippers, shoes, bags and other shaped articles. (*chair covers, cushions, &c.*)	2788	22nd Oct. 1870	Archibald Turner.
Machinery or apparatus for beating and cleansing carpets, rugs, and other articles.	2811	26th Oct. 1870	William Hill.
Improved means of and apparatus for preventing the entrance of flies and other insects and reptiles into rooms or apartments of buildings, ships and carriages. (*wire curtain or cover.*)	2822	27th Oct. 1870	Sarah Beauchamp Bush.
An improved camp-bed which may be used for several various useful purposes.	2851	29th Oct. 1870	Auguste Lafage.
Manufacture of padded quilts and other articles -	2901	3rd Nov. 1870	Henry Armitage.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
VALVES, &c.—*continued.*			
Direct-acting power hammers and machinery for apparatus connected in crushing and pulverising. (*valve mechanism.*)	715	10th March 1870	Samuel Chatwood. John Sturgeon.
Improvements in maintaining, controlling and registering the pressure in hydraulic presses and in apparatus therewith.	785	16th March 1870	Francis Virtue.
An improved lubricating apparatus for lubricating the slide valves and cylinders of steam engines.	829	21st March 1870	John Ferris.
An improved method of counteracting the pressure on the slide valves of steam or other engines. (*Communicated by William Myrtle Williams.*)	845	22nd March 1870	William Robert Lake.
Improvements in locomotion and in the means to be employed therein. (*use of stop valves for insuring stoppage of the train.*) (*Communicated by Nicolas Joly.*)	847	22nd March 1870	John Henry Johnson.
Turbine water-wheels - - - - (*Communicated by Henry Allen Chadwick.*)	870	24th March 1870	William Robert Lake.
Steam-engines - - - - - -	873	25th March 1870	Alexander Baumann.
Valves - - - - - (*Communicated by Gerard Sickels and John Hill Thorndike.*)	882	25th March 1870	Bristow Hunt.
Improvements in the valves of steam-engines and in the mechanism for operating the same. (*Communicated by George Enoch Noyes.*)	885	25th March 1870	William Robert Lake.
Equilibrium slide-valves - - -	977	2nd April 1870	Charles Wilson. John Peebles.
Improvements in steering gear, and in machinery for starting, stopping and reversing heavy steam-engines and turrets, and for discharging cargo. (*steering slide valves.*)	1018	7th April 1870	Andrew Betts Brown.
Certain improvements in steam and other elastic fluid engines. (*supply and exhaust valve.*)	1063	12th April 1870	Robert Wilson.
Centre valves for gas purifiers and other apparatus	1064	12th April 1870	Charles Clement Walker. William Thomas Walker.
Construction of engines worked by steam or other motive power. - - - - (*constructing slide valves.*)	1096	14th April 1870	William Simpson. Alfred Gardner.
Water-feeding apparatus for boilers - - -	1103	14th April 1870	Paul Narcisse Joseph Macabies.
An improved machine for drilling or boring rocks, chiefly designed for working mines, tunnels and quarries, and for submarine operations. (*cylindrical distributing valve.*) (*Communicated by James Asbury McKean.*)	1104	14th April 1870	William Robert Lake.
Certain improvements in the construction of receptacles for containing liquids to facilitate the control of egress or delivery therefrom.	1109	16th April 1870	Henry Brooks.
An improved method of and apparatus for securing and measuring liquids.	1117	16th April 1870	Nicholas Murphy.
Construction of cocks for gas or for beer or wine or other liquids or fluids.	1133	19th April 1870	Frederick Tallis.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
VALVES, &c.—*continued.*			
An improved device for operating the throttle valve or regulator in locomotive engines and for other like purposes. (*Communicated by Henry Leffert Brevoort.*)	1145	19th April 1870	Alfred Vincent Newton.
Slide valves - - - - - -	1147	19th April 1870	James Grafton Jones. George William Elliott.
An improved construction of valve cock - -	1157	20th April 1870	Robert Purvis Beattie.
Machinery for cutting heel and sole pieces or other forms of leather. (*valves.*)	1166	21st April 1870	James Thomas Sheppard.
Improvements in the manufacture and in the securing of tubes, taps and plugs in boilers and other vessels, also in certain modes of regulating and stopping the flow of liquids, gases or air into or from such vessels.	1180	22nd April 1870	Charles Lungley.
Construction of multitubular steam boilers - (*Communicated by Georg Friedrich Udelhoven.*)	1207	26th April 1870	Alexander Browne.
Arrangement of pipes for drawing liquids from casks and other vessels.	1213	27th April 1870	Francis Joseph Ortner.
Construction of oscillating cylinder engines -	1216	27th April 1870	Henry Edward Curtis.
An improved valve or stop cock - - (*Communicated by John Cram Chapman.*)	1252	2nd May 1870	William Robert Lake.
An improved combined self-closing stopper and whistle for the mouth pieces of speaking tubes, which stopper may also be adapted to bottles and other vessels, and to cocks, taps and other articles for regulating the flow of liquids.	1258	2nd May 1870	James Leetch.
Steam-engines - - - - - (*Communicated by Messrs. Babcock and Wilcox.*)	1286	5th May 1870	William Robert Lake.
Cocks - - - - - -	1329	10th May 1870	Bernard Hippolyte Chameroy.
Apparatus or machinery for making gas from liquid hydro-carbons for illuminating purposes. (*Communicated by Myron Hopkins Strong, Thomas Barbour and Charles Cunningham Connor.*)	1335	10th May 1870	William Robert Lake.
Construction of steam valves or cocks - - (*Communicated by George Snowden Redfield, Edward Abraham Rock and James Seel Gill.*)	1357	12th May 1870	William Edward Newton.
Manufacture of bearings, slides and packings of steam engines and other machinery. (*Communicated by Elisa Dexter Murfey.*)	1401	16th May 1870	John Henry Johnson.
Taps or stopcocks - - - - -	1403	16th May 1870	James Yates.
Steam pumping or blowing engines - - (*Communicated by James Riley Maxwell and Ezra Cope.*)	1413	17th May 1870	Martin Benson.
An improved automatic barrel-filling apparatus - (*Communicated by Seth Clinton Catlin.*)	1429	18th May 1870	William Edward Newton.
Valves for drawing off water and other fluids, applicable to water cranes and for other uses.	1449	19th May 1870	Robert Pitt.
Apparatus for lighting and heating purposes - (*regulating and controlling the flow of the burning oil or liquid.*)	1467	20th May 1870	Albert Marcius Silber. Frederick White.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
VALVES, &c.—*continued.*			
Construction and arrangement of valves for regulating the supply or discharge of steam, water and other fluids.	1472	21st May 1870	Thomas Holt Lloyd.
Steam and other valves - - -	1477	21st May 1870	Henry Hind. George Wells.
Means for regulating the flow or controlling the supply of water or other fluids.	1486	23rd May 1870	Alfred Long.
Improved apparatus for discharging water from steam pipes. - - - -	1502	24th May 1870	Alexander Cochran. John Kerr.
Improvements in parlour foot-balls and other india-rubber articles, which improvements relate partly to illustrating the surfaces of such articles and partly to inflating the same. (*stop valve.*)	1505	24th May 1870	Thomas Jefferson Mayal.
Safety attachments for steam generators - - (*cleaning and fitting valves.*) (*Communicated by Hiram Kimball.*)	1549	27th May 1870	Benjamin Joseph Barnard Mills.
Improvements in the method or methods of supply and exit of water and other fluids respectively to and from aquariums, tanks, cisterns and other like vessels and in the apparatus connected therewith.	1565	28th May 1870	William Thomas Small.
Rotary engines and pumps - - -	1679	10th June 1870	Robert Thomas Yeadon Johnson.
Water waste preventers - - -	1686	11th June 1870	Francis George Fleury.
Improvements in steam and other vessels, and in steam-engines, steam boilers and propellers applicable thereto, parts of which improvements are adapted for other purposes. (*Communicated by James Montgomery.*)	1691	11th June 1870	Benjamin Joseph Barnard Mills.
Slide valves - - - - -	1707	14th June 1870	George Weir. James Weir.
Improvements in apparatus for the supply of water to waterclosets, urinals, lavatories, buildings and streets, some of which improvements are applicable to other purposes.	1713	15th June 1870	Henry Law.
Valves applicable to steam or water pressure -	1768	21st June 1870	Thomas Common Brown.
Rotary engines - - - -	1779	22nd June 1870	Thomas Graham. Thomas Dixon.
An improved faucet - - - - (*Communicated by Isaac Carey.*)	1793	23rd June 1870	William Robert Lake.
New or improved constructions and arrangements of valves and their actuating parts, and their application to steam boilers and engines, suitable also for other purposes.	1815	27th June 1870	David Rowan.
Steam generators - - - - - (*Communicated by Henry Petitpierre.*)	1843	28th June 1870	Alexander Melville Clark.
An improved and combined hydraulic filter and double valve tap.	1849	29th June 1870	Samuel Norton.
Improvements in means or apparatus for measuring the flow or passage of liquids, which improvements are also applicable to obtaining motive power. - - - -	1883	2nd July 1870	George Scott. Henry Young.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
VALVES, &c.—*continued.*			
Apparatus for discharging water and air from steam pipes and apparatus.	1888	4th July 1870	John Shanks.
Condensers for steam-engines - - - (*automatic valves.*)	1968	12th July 1870	John Walker McCarter.
Valve taps - - - - - -	2034	19th July 1870	Samuel Norton.
Manufacture of ball valves for supplying water cisterns and tanks.	2041	20th July 1870	Henry Redfern.
Lamps - - - - - - - - (*Communicated by Franklin Thomas Grimes.*)	2061	21st July 1870	William Edward Newton.
Stop valves - - - - - -	2081	23rd July 1870	Henry Doulton.
Improved means and apparatus for regulating the admission of air to steam-boiler and other furnaces.	2099	26th July 1870	Charles Gall.
Improvements in furnace grates and in apparatus connected therewith for heating water for steam boilers and for other like purposes. (*Communicated by Charles Emery Hutson.*)	2112	27th July 1870	William Robert Lake.
Steam-engines - - - - - -	2184	5th Aug. 1870	Max Eyth.
An improved method of regulating the opening and closing of watercloset and other cocks by hydraulic pressure.	2229	11th Aug. 1870	Thomas Penn.
Means and apparatus for working brakes for the rolling stock of railways and tramways, as also for working feed-water pumps in connection therewith. (*three-way cock, rocking valves, &c.*) (*Communicated by George Westinghouse, junior.*)	2235	11th Aug. 1870	Charles Denton Abel.
Mechanical arrangements for drawing off liquids from beer casks, barrels and other vessels.	2238	12th Aug. 1870	William James.
Construction of water cocks and gas cocks -	2278	17th Aug. 1870	William Harvey.
Certain improvements in diminishing valves for steam and other purposes.	2315	23rd Aug. 1870	Squire Farron.
Improved means of and apparatus for lighting gas lamps. (*double-acting valve.*)	2361	29th Aug. 1870	Edmund Chiverton.
Improvements in apparatus for heating water for steam-boilers and for other purposes, and for an improved vaccuum valve to prevent collapse.	2430	8th Sept. 1870	James Eastwood.
Steam, gas and air engines - - -	2437	9th Sept. 1870	George Henry Ellis.
Improvements in wet and dry closets and in apparatus connected therewith. (*improved cistern arrangement.*)	2460	12th Sept. 1870	Alfred Tylor.
Apparatus for raising and drawing off liquids -	2522	20th Sept. 1870	Adolphus Frankenberg.
Cut-off valve gear for steam engines - - (*Communicated by Daniel Frank Mosman.*)	2528	20th Sept. 1870	David Hunter Brandon.
An improved lubricating apparatus for lubricating the slide valves and cylinders of steam-engines.	2558	23rd Sept. 1870	John Pardoe Ferris.
Portable apparatus for manufacturing gas -	2591	29th Sept. 1870	George Symes.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
VALVES, &c.—*continued.*			
An improved valve apparatus applicable to vessels for containing petroleum and other volatile oils and spirits. (*Communicated by Messieurs Meissner, Ackermann and Company.*)	2596	30th Sept. 1870	George Henry Funck.
Working of locomotive engines - -	2612	1st Oct. 1870	Joseph Ward.
Construction of cocks and valves - -	2618	1st Oct. 1870	Frederick James Head.
Stop valves - - - - -	2631	4th Oct. 1870	Joseph Alfred Rothwell.
Combined lifting and force pumps - - (*the division plug, sealing valve, &c.*) (*Communicated by Isaac H. Gustin.*)	2633	4th Oct. 1870	George Haseltine.
Improved means or apparatus for stopping or regulating the flow of fluids, gases or steam.	2656	7th Oct. 1870	Martyn John Roberts.
Apparatus for measuring and registering the flow of liquids.	2672	8th Oct. 1870	Adolphus Frankenberg.
Production of motive-power and appliances connected therewith. - - - - -	2729	17th Oct. 1870	George Bell Galloway. George Thomas Galloway
Improved arrangements for applying compressed air or other fluid to propel omnibuses or other vehicles on railways, tramways or common roads, and in part applicable otherwise. - - (*pressure-reducing valve.*)	2733	17th Oct. 1870	David Laidlaw. John Thomson.
Improvement in and relating to ball valves and floats.	2826	27th Oct. 1870	William Ross.
Apparatus for controlling the passage of water or other fluids.	2846	29th Oct. 1870	Alfred Long.
Steam-engines - - - - (*valves and valve gear.*)	2871	1st Nov. 1870	William Dawes.
Self-closing taps or valves - - -	2903	3rd Nov. 1870	Joseph Breeden.
An improved method of tapping barrels, casks and other vessels in which taps or cocks are used to draw off the liquid contents thereof. - -	2918	4th Nov. 1870	Charles William Meier. Thomas William Smith.
Apparatus for effecting and regulating the supply of the deodorizing material in earth closets. (*winged valve.*) (*Communicated by William R. C. Clark and James E. Aiken.*)	2951	9th Nov. 1870	William Robert Lake.
Safety valves - - - - -	2954	10th Nov. 1870	John Addy Hopkinson. Joseph Hopkinson, jun.
Improvements in steam generators and in apparatus in connection therewith. - - -	3025	18th Nov. 1870	Thomas Mills. William Bryce.
Condensers for steam pumps - - - (*Communicated by William Craig and Henry Lefferts Brevoort.*	3049	21st Nov. 1870	Alfred Vincent Newton.
Hydro-carbon lighting apparatus chiefly designed for locomotives and signals. (*Communicated by Myron Hopkins Strong, Thomas Barbour, Charles Cunningham Connor and Robert Barbour.*)	3061	23rd Nov. 1870	William Robert Lake.
Gas-regulating apparatus - - - (*Communicated by Myron Hopkins Strong, Thomas Barbour, Charles Cunningham Connor and Robert Barbour.*)	3062	23rd Nov. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
VALVES, &c.—*continued.*			
An automatic ventilator, alarm and pump for vessels. (*Communicated by William FitzJames Thiers, P. D. Rodney and Edward Parkman.*)	3117	28th Nov. 1870	Benjamin Joseph Barnard Mills.
Machinery for drilling or boring rocks and other mineral substances in mining, tunnelling, quarrying and other like operations. (*valve casing.*)	3131	29th Nov. 1870	Fenner Ballou Taylor.
Improvements in blowing engines, and in valves for the same and applicable otherwise. - -	3174	3rd Dec. 1870	William Hargreaves. William Inglis.
Certain improvements in engines worked by steam and other elastic fluids and in valves. - -	3176	3rd Dec. 1870	George Holcroft. William Nathan Dack.
Four-way valve apparatus - - -	3179	3rd Dec. 1870	John Robb.
Portable and other steam-engines - - (*construction of slide valves.*)	3186	3rd Dec. 1870	Edward Rush Turner.
Cocks and valves - - -	3304	17th Dec. 1870	Sydney Smith.
Slide valves for steam and other engines - -	3336	21st Dec. 1870	Joseph Crichton Black.
Construction of equilibrium slide valves - -	3350	22nd Dec. 1870	Francis Jackson.
Apparatus for drawing off and measuring liquids -	3351	22nd Dec. 1870	Charles Alexander Calvert.
Improvements in the slide valves of steam and other motive-power engines and in apparatus connected therewith. - - -	3355	22nd Dec. 1870	James Marshall. William Bishop Harding.
VELOCIPEDES.			
Apparatus connected with bicycles or two-wheeled velocipedes.	22	3rd Jan. 1870	Charles Wyndham.
An improved appliance for facilitating the working of bicycles and tricycles.	209	22nd Jan. 1870	Archibald Samuels Campbell.
Bicycles - - - -	361	8th Feb. 1870	Samuel Webb Thomas, M.A.
Velocipedes - - - -	363	8th Feb. 1870	Arthur Field. Edwin Badger.
Velocipedes - - - -	473	17th Feb. 1870	Rudolph Duerre.
Bicycles - - - -	690	8th March 1870	Charles Wyndham.
Velocipedes - - - -	754	15th March 1870	Gavin Brown.
Velocipedes - - - -	859	23rd March 1870	John Henry Miles.
Improvements in velocipedes, parts of which improvements are applicable to machinery generally. - - - -	979	2nd April 1870	Alfred Milnes Hobson. Edward Cozens Smith.
Construction of carriages, vehicles and velocipedes	1039	8th April 1870	André Etienne.
Velocipedes - - - - (*Communicated by Charles Dopping Irvine.*)	1094	14th April 1870	Joseph Plaskitt.
Apparatus for facilitating travelling on foot -	1344	11th May 1870	Thomas Jonathan Guy.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
VELOCIPEDES, &c.—*continued.*			
Facilitating the mounting a horse or velocipede or bicycle or other vehicle.	1618	4th June 1870	Charles Kenney.
Velocipedes - - - -	1623	4th June 1870	Samuel Adams.
Velocipedes - - - -	1813	25th June 1870	Emile Vaârengo de Forville.
Steam-engines - - - (*three-wheeled velocimanes or velocipedes.*)	1818	27th June 1870	Vincent Rastouin.
Velocipedes - - - -	1862	30th June 1870	Henry Hodgkinson.
Construction of wheels - - -	1920	7th July 1870	John James McGrath.
Velocipedes - - - -	2155	2nd Aug. 1870	George Friedrich Greiner Jacob Friedrich Hiller.
Improvements in the construction of wheels applicable chiefly to velocipedes, and in the driving gear of such vehicles. - - -	2236	11th Aug. 1870	James Starley. William Hillman.
Velocipedes - - - -	2270	16th Aug. 1870	James Pain.
Propulsion and guidance or steerage of velocipedes and boats.	2770	20th Oct. 1870	Isaac Farrell.
Velocipede carriages and vehicles - -	3077	24th Nov. 1870	Sidney Johnson.
An improved crank action applicable to velocipedes	3207	6th Dec. 1870	Josiah Turner.
For velocipede wheels, *see* "WHEELS FOR CARRIAGES."			
VENTILATION; SUPPLYING AND PURIFYING AIR FOR BUILDINGS, MINES, SHIPS, CARRIAGES, &c.			
Improved means for warming and ventilating close carriages and boat saloons. (*Communicated by Pierre Grandjean.*)	122	14th Jan. 1870	Henri Adrien Bonne[illegible]
Improvements in apparatus used in the manufacture of gas, part of which apparatus is also applicable for ventilating mines, for promoting combustion, and for pumping, measuring and forcing fluids. - - -	259	28th Jan. 1870	Edmund Small Ca[illegible] David Terrace.
Hats - - - - (*insuring ventilation.*)	263	28th Jan. 1870	George Thornhill.
Motive-power engines and steam generators to be used therewith suitable for domestic purposes. (*driving ventilators.*) (*Communicated by Hippolyte Fontaine.*)	284	31st Jan. 1870	John Henry Johns[illegible]
Fire-places or stoves - - - (*for ventilation.*)	307	2nd Feb. 1870	James Pigott Pritch[illegible]
Ventilation of chimneys and apartments - -	393	10th Feb. 1870	James Thomson. William Thomson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
VENTILATION, &c.—*continued.*			
Subdividing particles of water and other fluids and applying the same to sanitary and other purposes. (*for purifying air in sick rooms, &c.*)	596	1st March 1870	Marmaduke Wilkin. John Clark. Adam Scott.
Ships' illuminators or scuttles (*for ventilation.*)	619	2nd March 1870	William Darley.
Waterproof garments (*ventilating.*)	646	4th March 1870	Samuel Cohen.
Improvements in the mounting, working and pointing of guns and in the construction of the carriages upon which they are mounted. (*ventilating.*)	647	4th March 1870	Robert Anthony Edward Scott.
Improved means of ventilating and reducing the temperature of rooms or apartments in vessels, buildings and other structures.	655	5th March 1870	George Elliot.
Improved apparatus for injecting and reducing liquids to a state of spray or minute subdivision. (*for ventilating rooms.*) (*Communicated by Alcide Sanial du Fay.*)	673	7th March 1870	William Edward Newton.
Improvements applicable to hats and other like coverings for the head.	705	10th March 1870	Henry Sikes Gibson.
An improved hygienic and mecanical hat (*ventilating.*)	763	15th March 1870	Paul Charles Nicolas de Ferrari.
Ventilating lights	818	19th March 1870	John Hockey.
Hats and other like coverings for the head	913	29th March 1870	Frederick John Upton.
Ventilation of hats	940	31st March 1870	Franklin Tocher.
Structures for the preservation of fruits, vegetables, meats and other perishable articles. (*keeping the air pure.*) (*Communicated by Nathan Hellings.*)	1070	12th April 1870	John Henry Johnson.
Means of and apparatus for effecting fumigation, vaporization and inhalation, applicable to medicinal and sanatory purposes.	1183	23rd April 1870	Charles Harley Savory. William Robert Barker.
Apparatus for lifting, forcing or conducting liquids, gases or air.	1262	3rd May 1870	James Anthony Emslie. James Thomas Emslie.
Warming and ventilating horticultural buildings and other structures.	1382	14th May 1870	Henry Ormson.
A new or improved ventilator for the cabins, holds and compartments of ships and the chambers and apartments of buildings.	1510	25th May 1870	John Sampson Starnes.
Ventilating mines	1515	25th May 1870	Jonathan Wright Horsfall.
Improved machinery for making ice and for other refrigerating purposes. (*for cooling theatres, &c.*)	1579	30th May 1870	Leon Mignot.
Ventilation of tunnels	1673	9th June 1870	John Dickinson Brunton.
Apparatus for ventilating ships and for extinguishing fires on board same. (*Communicated by Edward Kirk Horn.*)	1705	14th June 1870	George Wells.
A new and improved apparatus for warming and ventilating carriages and boats. (*Communicated by Pierre Grandjean.*)	1816	27th June 1870	Henri Adrien Bonneville.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
VENTILATION, &c.—*continued.*			
Apparatus for pumping and forcing air and other fluids, and which apparatus is peculiarly applicable to desiccating the ventilation of mines, buildings, ships and other structures, and for blast and other purposes.	1976	13th July 1870	William Cowley.
Apparatus for warming, vaporising and causing a free circulation of fresh air in horticultural structures and other buildings, which apparatus is also applicable for the ventilation of mines and other places.	2038	20th July 1870	Ambrose Lloyd Taylor.
Ventilating houses and buildings, ships and railway and other carriages, and increasing or decreasing the temperature thereof.	2042	20th July 1870	William Haggett.
Ventilators - - - -	2057	21st July 1870	Thomas Alfred Warrington.
Ventilators - - - -	2120	28th July 1870	Robert Boyle.
An improved fumigating material - - (*purifying air.*)	2125	29th July 1870	George Cupit Fowler.
Apparatus for preventing smokey chimnies and for ventilation generally.	2179	4th Aug. 1870	John Sycamore.
Improvements in ventilation and in the purification of air.	2200	8th Aug. 1870	James Garth Marshall.
An improved ventilating roller window-blind -	2290	19th Aug. 1870	Arthur Cooper.
Improvements in waterproof garments, which improvements are also applicable to garments in general. (*ventilating.*)	2336	25th Aug. 1870	William Bullock.
Chimney tops and ventilators - -	2422	6th Sept. 1870	Thomas Murray Gladstone.
Manufacture of "brattice cloths" used in coal and other mines.	2490	15th Sept. 1870	Illius Augustus Timmis.
An improved means or apparatus for ventilating rooms or buildings.	2505	17th Sept. 1870	Thomas Walton.
Apparatus for ventilating stoke holes and engine rooms of steam ships. - -	2643	5th Oct. 1870	William Rudd Oswald. George Hough.
Construction of illuminating and ventilating roofs and gratings or plates, parts of which are applicable to ordinary footways and carriage ways. (*Communicated by Theodore Hyatt.*)	2755	20th Oct. 1870	John Henry Johnson.
Improvements in fan punkahs and in apparatus in connection therewith.	3034	19th Nov. 1870	Lestock Francis Boileau.
Ventilating sewers by apparatus adapted for that purpose.	3060	23rd Nov. 1870	William Richard Pook.
An automatic ventilator, alarm and pump for vessels. (*Communicated by William Fitz James Thiers, P. D. Roddey and Edward Parkman.*)	3117	28th Nov. 1870	Benjamin Joseph Barnard Mills.
Boots, shoes and other coverings for the feet -	3141	30th Nov. 1870	Martin Tobin.
Improvements in the means for exhausting or charging receivers, principally applicable for working pneumatic tubes, for raising fluids and for exhausting steam in steam-engines, including particular arrangements of apparatus for carrying out these several objects. (*ventilating mines.*)	3255	12th Dec. 1870	Charles William Siemens.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
VENTILATION, &c.—*continued.*			
Manufacture of non-inflammable brattice cloths -	3348	22nd Dec. 1870	Oswald Brooke. Alfred William Read.
Viaducts adapted both for pedestrian traffic and for the supply of fresh air to buildings in crowded localities. (*Communicated by John Perry.*)	3388	29th Dec. 1870	George Tomlinson Bousfield.
VICES, SCREW AND RATCHET WRENCHES, SCREW KEYS OR SPANNERS, SCREW STOCKS AND DIES, RATCHET BRACES, FLOOR DOGS OR CRAMPS, CRAMP KEYS, RACK-WORK, BRAD HOLDERS AND DRIVERS, NAIL EXTRACTORS.			
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion. (*applying grab links to cramps.*)	175	20th Jan. 1870	James Maze Kilner.
Floor cramps - - - - - - -	232	25th Jan. 1870	Francis James Barnby.
An improved manufacture of wrenches, and in machinery connected with the same.	297	1st Feb. 1870	Aury Gates Coes.
An improved friction clutch - - - (*Communicated by Francis Ashbury Pratt and Samuel Coit.*)	319	3rd Feb. 1870	William Robert Lake.
Improvements in clutches for engaging and disengaging parts of machinery, and in apparatus for working such clutches. - - -	356	7th Feb. 1870	Benjamin Walker. John Frederick Augustus Pflaum.
An improved combination implement, consisting chiefly of a hammer, screwdriver, nail-puller and rule.	434	14th Feb. 1870	Frank Theophilus Ferguson.
An improved adjusting spanner - - -	466	17th Feb. 1870	Robert Francis Drury.
Improvements in dressing stone, and in the machinery or apparatus employed therefor. (*construction of the jaws or grippers.*)	518	22nd Feb. 1870	William Adams.
Improvements in combination tools, which improvements are also partly applicable to scissors, pliers and such like instruments. (*vices, nippers, claw for drawing tacks, &c.*) (*Communicated by EmileGranier.*)	520	22nd Feb. 1870	Alexander Melville Clark.
Manufacture of stocks for screwing and cutting iron pipes, bolts and other similar uses.	525	23rd Feb. 1870	George Leech.
Hand punching machines - - -	528	23rd Feb. 1870	Thomas Andrew.
Differential pulley blocks and other apparatus for moving heavy bodies. (*applicable to screw jacks.*)	777	16th March 1870	Peter Murray.
A new or improved ratchet brace or ratchet drill brace and grab combined.	862	24th March 1870	James Gilchrist.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
VICES, &c.—*continued.*			
Wrenches - - - - - - (*Communicated by George Carpenter Taft.*)	904	28th March 1870	John Henry Johnson.
Clickouts or tools for drawing nails, spikes and bolts out of timber or other materials.	946	31st March 1870	John Nicholes Taylor.
Tube cutters and screw stocks - - -	978	2nd April 1870	Henry James Taylor Piercy.
Certain new and useful improvements in pipe wrenches. (*Communicated by Daniel Chapman Stillson.*)	1227	28th April 1870	Charles William Alden.
A new or improved pipe wrench - - -	1295	6th May 1870	Abraham Ripley.
Holding frames or brackets, or apparatus for holding and securing cash deed and jewel boxes or other portable articles of value.	1426	18th May 1870	James George Charlick.
Improvements in screws and screwdrivers, and in the machinery for the manufacture of screws.	1971	12th July 1870	John Frearson.
A new or improved apparatus for stretching and nailing carpets, applicable also to other useful purposes. (*nail holder.*) (*Communicated by Sydney Cooke.*)	2119	28th July 1870	William James Schlesinger.
Self-acting machinery for making and finishing boots and shoes. - - - - (*nippers for nipping the wire.*)	3048	21st Nov. 1870	Charles Henry Southall. John Blakey.
Construction of cramps used by carpenters, joiners, builders and others. - - -	3127	29th Nov. 1870	John Brooks. Thomas Cundy.
Machinery for screwing bolts - - -	3285	15th Dec. 1870	Benjamin William Rogers.
Screw-drivers and similar instruments or tools -	3331	21st Dec. 1870	Pacific Taglia.
VOTING, REGISTERING VOTES; BALLOT BOXES.			
Apparatus for taking and registering votes - -	257	28th Jan. 1870	John Coope Haddan.
Apparatus for taking and registering votes -	2721	15th Oct. 1870	John Coope Haddan. John Imray.
WASHING, CLEANSING AND WRINGING FABRICS, YARNS AND MATERIALS.			
Rag engines - - - - -	132	15th Jan. 1870	Edwin Grundy Wrigley.
Machinery for breaking, heckling, streaking and cleaning hemp, cleaning flax, tow, washing wool, and heckling, cleaning or washing other fibrous materials.	280	31st Jan. 1870	Edward Brasier.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WASHING, &c.—*continued.*			
Improvements in machinery or apparatus for washing or scouring and drying wool and other fibrous materials and yarns or threads.	386	9th Feb. 1870	John Petrie, junior.
Machinery for shearing and washing sheep or other animals.	394	10th Feb. 1870	John Charles Wilson.
Improved apparatus for washing and cleansing clothes and other textile fabrics.	499	19th Feb. 1870	John Hammond.
Apparatus for washing, wringing and mangling -	521	23rd Feb. 1870	George Henry Ellis.
Machinery or apparatus for drying woven fabrics and yarns or threads, and for "ageing" woven fabrics. (*after washing.*)	527	23rd Feb. 1870	James Farmer.
A new method or methods for extracting and purifying mill waste, refuse flock material, and removing dyed colours and re-dying the same into other colours for re-manufacture, for using certain agents employed in the process and thereby making a manure.	530	23rd Feb. 1870	George Rydill.
Improved arrangements or combinations of machinery for finishing threads or yarns of cotton or other fibrous materials. - - - (*washing, &c.*)	702	10th March 1870	Oliver Ormrod. Robert Hall.
Certain improvements in elastic rolls or tubing for clothes wringers and various other purposes, as well as in machinery for manufacturing the same.	786	16th March 1870	Joel Moulton.
An improved combined washing machine and ironing table.	909	28th March 1870	Otis Henry Weed.
Apparatus for washing and treating pulps - - (*Communicated by Louis Joseph Amedée Lespermont.*)	994	5th April 1870	Alexander Melville Clark.
An improved process for cleaning wool or hair - (*Communicated by Charles F. A. Simonin and Edward W. Coffin.*)	1219	27th April 1870	William Robert Lake.
A new or improved detergent compound to be used in the manufacture of soap and for cleansing wool and woollen goods and for other like purposes.	1331	10th May 1870	William Hunt.
Apparatus, instruments or appliances for washing and rinsing.	1393	16th May 1870	George Gordon De Luna Byron.
Machinery or apparatus for washing and drying wool, yarn and other fibrous materials - -	1511	25th May 1870	John McNaught. William McNaught.
Washing-machines - - - - (*Communicated by Joshua Thomas Owen.*)	1512	25th May 1870	William Robert Lake.
Washing, churning and mixing machinery - -	1539	27th May 1870	John Ingham Taylor.
Improvements in producing rotary motion applicable to egg beaters, churns, bottle washers, washing machines, drills, tools and other instruments. (*Communicated by M. W. Robinson.*)	1557	27th May 1870	William James Schlesinger.
Improvements in or applicable to milling or fulling and washing machines.	1632	6th June 1870	Alfred Johnson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WASHING, &c.—*continued.*			
An improved stop motion applicable to machinery or apparatus employed in bleaching, scouring, dyeing, sizing and dressing warps, yarns and fabrics, also in carding and combing wool or other fibrous substances. - - -	1654	8th June 1870	William Dewhirst. Thomas Dewhirst. Joseph Dewhirst.
Improvements in apparatus for the supply of water to waterclosets, urinals, lavatories, buildings and streets, some of which improvements are applicable to other purposes.	1713	15th June 1870	Henry Law.
Apparatus for washing and boiling linen and other fabrics.	1763	21st June 1870	Henry Thomas Davey.
Apparatus for dyeing or otherwise treating yarns -	1840	28th June 1870	Thomas Paterson Miller. David Miller.
Machinery for washing or scouring wool and other fibrous materials.	2060	21st July 1870	John Petrie, junior.
Washing machines - - - - - (*Communicated by Henry Greaves.*)	2094	25th July 1870	Thomas Peck Bayes.
An improved washing machine - - -	2240	12th Aug. 1870	Thomas Atkinson Ellis.
Machinery for washing wool - - - (*Communicated by John Yewdall and William Yewdall.*)	2392	2nd Sept. 1870	Bristow Hunt.
Improvements in washing wool and other textile materials, and in apparatus to be employed for such purpose. (*Communicated by Auguste Féron-Flamant.*)	2417	6th Sept. 1870	Bristow Hunt.
Apparatus suitable for scouring, washing, bleaching, dyeing and drying fibrous materials in the raw and manufactured state, and for like purposes. - - - - - -	2462	12th Sept. 1870	Thomas Nesham Kirkham. Vernon Francis Ensom. George Spence.
Washing machines - - - -	2646	6th Oct. 1870	James Lumley. Wilson Parnell.
An improved steam-washing, disinfecting and delivering machine.	2722	15th Oct. 1870	Joseph Flower Hart.
An improved process for cleaning wool and separating the grease therefrom.	2745	18th Oct. 1870	Paul Toepler.
Machinery for "planking" or felting hat bodies, applicable also to some other purposes. (*to washing fabrics.*)	2759	20th Oct. 1870	Firth Garside.
Machinery or apparatus for washing, opening and drying wool and other fibrous materials and washing yarns. - - - - -	2772	21st Oct. 1870	John McNaught. William McNaught, junr.
Treatment of resinous gums employed in the manufacture of varnishes. - - -	2804	25th Oct. 1870	Charles Watts. Thomas Charles Watts.
Improvements applicable to machinery for washing or scouring wool and other fibrous materials, applicable also to other machinery for conveying, opening and cleaning fibrous materials. -	2942	8th Nov. 1870	William Thomas. William Rothwell.
Machinery for preparing and washing wool and other fibrous materials and for mixing and forming fur or materials for felt hat bodies. - -	3038	21st Nov. 1870	John Charles Edwards. John Taft.
Mechanism or apparatus to be employed for wringing and mangling woven fabrics. - -	3146	1st Dec. 1870	Silas Schofield. Alfred Schofield.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WASHING, &c.—*continued.*			
A new or improved method of and apparatus for washing or cleansing whilst in motion the felts used in making paper by machine.	3160	2nd Dec. 1870	Thomas John Marshall.
For washing ores, *see* "METALS." For washing bottles, *see* "BOTTLES." For washing casks, *see* "CASKS." For washing coals, *see* "FUEL." For washing potatoes, *see* "PRESERVING FOOD." For washing grain, *see* "THRASHING." For washing clay, *see* "BRICKS." For washing sugar, *see* "SUGAR." For washing floors, *see* "BUILDING."			
WATER-CLOSETS, URINALS AND COMMODES.			
Apparatus for regulating the supply of water to water-closets and wherever a regulated supply may be required.	368	8th Feb. 1870	Andrew Ainslie Common.
Improvements in and connected with water-closets and other sanitary appliances.	577	26th Feb. 1870	John Randall Mann.
Apparatus applicable to the treatment of towns' and domestic refuse for sanitary purposes.	630	3rd March 1870	James Conyers Morrell.
Improved arrangements of privies, closets and commodes, and also for improvements in the apparatus for removing, emptying and cleansing the same.	920	30th March 1870	Joseph Fennell.
A new or improved apparatus for registering or indicating figures or numbers, applicable to seats of chairs, weighing machines, and other useful purposes. (*for water-closets.*)	950	31st March 1870	Joseph Bailey.
Dry earth closets - - - - - -	1000	5th April 1870	John Parker.
Apparatus for receiving and treating sewage and other noxious matters. (*construction of commodes.*)	1311	7th May 1870	Robert Weare.
Cocks - - - - - - - - (*for water-closets.*)	1329	10th May 1870	Bernard Hippolyte Chameroy.
Earth closets, applicable also in part to water-closets and privies. (*Communicated by Charles Austin Wakefield.*)	1500	24th May 1870	William Edward Newton.
Improvements in apparatus for the supply of water to water-closets, urinals, lavatories, buildings and streets, some of which improvements are applicable to other purposes.	1713	15th June 1870	Henry Law.
Improvements in utilising and deodorizing sewage matters of dwelling houses and other places, and in apparatus to be used in connection with the same.	2047	20th July 1870	John Hughes Lloyd.
An improved combined portable water-closet, night commode and chamber pail.	2063	21st July 1870	Jabez Joseph Marriott Sills.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WATER-CLOSETS, &c.—*continued.*			
An improved method of regulating the opening and closing of water-closets and other cocks by hydraulic pressure.	2229	11th Aug. 1870	Thomas Penn.
"Dry" closets, commodes, urinals and other receptacles for putrescible matter.	2398	2nd Sept. 1870	John Ward Girdlestone.
Improvements in wet and dry closets and in apparatus connected therewith.	2460	12th Sept. 1870	Alfred Tylor.
Apparatus in connection with water-closets -	2497	16th Sept. 1870	Isaac Haigh. John Haigh. Isaac Haigh, jun.
An improved chamber utensil - - - - (*Communicated by Vernon Rhodes.*)	2634	4th Oct. 1870	Alfred Vincent Newton.
Improvements in and relating to ball valves and floats. (*for water-closets.*)	2826	27th Oct. 1870	William Ross.
Apparatus for effecting and regulating the supply of the deodorizing material in earth closets. (*Communicated by William R. C. Clark and James E. Aiken.*)	2951	9th Nov. 1870	William Robert Lake.
An improved apparatus for a deodoriser for water-closets.	2999	16th Nov. 1870	John Henry Spencer.
Commodes or portable water-closets - -	3060	24th Nov. 1870	William Prangley.
Earth closets - - - - - - (*Communicated by William Harrison Newton.*)	3086	24th Nov. 1870	John Henry Johnson.
Improvements in the manufacture of deodorizing and disinfecting compounds and in the treatment of sewage and impure waters, and in closets and apparatus for the treatment of sewage.	3167	2nd Dec. 1870	Fritz Hillé.
An improved apparatus for mixing soils, chemical manures and other substances, either separately or together, and for mixing dry with semi-fluid substances, liquids or air. (*applied to earth closets.*) (*Communicated by Frederick Tolhausen.*)	3213	7th Dec. 1870	Henry Hammond.
An improvement in water and other closet seats -	3229	8th Dec. 1870	John Wright.
Water-closets - - - - -	3347	21st Dec. 1870	Henry Bonnett.
WATERING; SUPPLYING AND DISTRIBUTING WATER; FOUNTAINS AND WELLS.			
Mode or method of supplying baths and other places with hot water.	6	1st Jan. 1870	George Richardson.
Improvements in the means for moistening the sheets of letter book and copying paper, and in apparatus connected therewith.	56	7th Jan. 1870	William James Purcell.
Means or apparatus for damping copying paper, stamps, labels and other materials and articles.	57	7th Jan. 1870	Henry Pritty.
Filters or other apparatus for the purification of water or other liquids under a high pressure. (*for water mains.*)	78	11th Jan. 1870	John Edward Lipscombe.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WATERING, &c.—*continued.*			
Means and apparatus for gauging or regulating the flow of water or other liquids. (*for water supply.*)	80	11th Jan. 1870	Edme Augustin Chameroy.
Apparatus for regulating the supply of water to water-closets, and wherever a regulated supply may be required.	368	8th Feb. 1870	Andrew Ainslie Common.
Improvements in utilizing water pressure in raising liquids, and in apparatus therefor, also in pressure-reducing valves for the said apparatus, and applicable otherwise. - - -	398	10th Feb. 1870	William M^cGeorge Mason. Thomas Lockerbie.
Improvements in pipes, gutters, troughing and other apparatus for irrigating and manuring land, and in girders and framing for supporting the said apparatus, and for other purposes.	503	21st Feb. 1870	Edwin Maw.
Improvements in the manufacture of gas, and in obtaining residual products from such manufacture, and in apparatus to be used in such manufacture. (*distributing water over coke.*)	510	21st Feb. 1870	Frank Clarke Hills.
An improved method of and apparatus for producing and utilizing a fall of water. (*see* "WATERWHEELS.") (*Communicated by Doctor Heiman Sanders-Ern.*)	557	25th Feb. 1870	William Robert Lake.
Subdividing particles of water and other fluids and applying the same to sanitary and other purposes. - - - -	596	1st March 1870	Marmaduke Wilkin. John Clark. Adam Scott.
Improved apparatus for injecting and reducing liquids to a state of spray or minute subdivision. (*watering lawns, syringing plants.*) (*Communicated by Alcide Sanial du Fay.*)	673	7th March 1870	William Edward Newton.
An improved apparatus for preventing waste of water in dwellings and other places where the constant supply service is laid on. - -	689	8th March 1870	George Preston. John Prestige.
A new apparatus for watering gardens, lawns, and other purposes.	721	11th March 1870	John Wright.
A new or improved apparatus for damping woven fabrics. (*Communicated by Emile Welter.*)	792	17th March 1870	William Edward Gedge.
A new or improved arrangement of apparatus for forcing and projecting liquids or fluids, and raising the temperature of the same. - -	996	5th April 1870	James More. William Leckie. Graham Wright.
An improved distributing apparatus to be applied to garden hose, syringes, and for other like purposes. (*and for fountains.*)	1132	19th April 1870	Samuel Barton, the younger.
Cocks - - - - - (*for hydrants.*)	1329	10th May 1870	Bernard Hippolyte Chameroy.
An improved apparatus to be employed in the filling of water carts with water.	1392	16th May 1870	Charles Wicksteed, junior.
Valves for drawing off water and other fluids, applicable to water cranes, and for other uses.	1449	19th May 1870	Robert Pitt.
An improved machine for watering and sweeping streets. (*Communicated by J. Wetzlar.*)	1523	26th May 1870	George Schück.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WATERING, &c.—*continued.*			
Improvements in the method or methods of supply and exit of water and other fluids respectively to and from aquariums, tanks, cisterns and other like vessels, and in the apparatus connected therewith.	1565	28th May 1870	William Thomas Small.
Fountains - - - -	1647	7th June 1870	Joseph Storer.
Water-waste preventers - - -	1686	11th June 1870	Francis George Fleury.
Improvements in apparatus for the supply of water to water-closets, urinals, lavatories, buildings and streets, some of which improvements are applicable to other purposes. (*hydrants.*)	1713	15th June 1870	Henry Law.
An improved and combined hydraulic filter and double valve top.	1849	29th June 1870	Samuel Norton.
An improved construction of mud cart and water cart combined.	2328	24th Aug. 1870	William Berry.
Manufacture of thin lead pipes for use in irrigation purposes.	2332	25th Aug. 1870	Isaac Brown.
Apparatus in connection with water-closets -	2497	16th Sept. 1870	Isaac Haigh. John Haigh. Isaac Haigh, junr.
An improved apparatus for damping textile threads or yarns in the processes of spinning, winding, reeling and warping or other similar processes.	2623	3rd Oct. 1870	Edmund Leach.
Combined lifting and force pumps - - (*hydrant.*) (*Communicated by Isaac H. Gustin.*)	2633	4th Oct. 1870	George Haseltine.
Improvements in treating sewage, and in the apparatus and means employed therein. (*obtaining water for watering streets, &c.*)	2653	6th Oct. 1870	Charles Felton Kirkman.
Mode of training hops, the sockets for the poles or posts of same and other posts, applicable also for the boring for water. (*Communicated by Eduardo Blythe.*)	2705	13th Oct. 1870	David Munroe Childs.
A new or improved fountain - - -	2813	26th Oct. 1870	William George Reeve.
Outlet or jet pipes of fire engines, high-pressure mains and other apparatus. (*Communicated by Jan Anthony Muller.*)	2820	27th Oct. 1870	Edward Thomas Hughes.
Application of concrete to structures and foundations for the same, also to coffer dams. (*well sinking.*)	3039	21st Nov. 1870	James William Butler.
Construction of irrigation conduits or channels for the conveyance and distribution of sewage and other waters.	3159	1st Dec. 1870	Henry Doulton.
Apparatus for injecting and ejecting fluids - (*Communicated by Alexander Friedmann.*)	3225	8th Dec. 1870	John Clayton Mewburn.
Apparatus for treating sewage matter, and for filtering sewage and other water.	3269	14th Dec. 1870	Frederick Ludewig Hahn Danchell.

See also "VALVES."

For water pipes, *see* "PIPES."

For supplying water to boilers, *see* "STEAM-BOILERS."

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WATERPROOF, FIREPROOF AND AIRPROOF FABRICS, BUILDINGS, &c., WATERPROOFING, FIREPROOFING AND AIRPROOFING.			
Improvements in rendering fabrics waterproof and in manufacturing a composition to be used for this purpose.	367	8th Feb. 1870	Angelo Lué.
Improved mode and means for preventing dampness and saltpetre.	442	15th Feb. 1870	Henry Dupland.
Manufacture of non-conducting material for preventing the radiation of heat. (*and rendering the material waterproof.*)	531	23rd Feb. 1870	Charles Henry Aston.
Waterproof garments - - -	646	4th March 1870	Samuel Cohen.
Manufacture of washable papers - - - (*and waterproof.*)	799	17th March 1870	Charles Hermann Rost.
Improvements in the manufacture of boxes and cases and in the modes or means of ornamenting and rendering the same wet-resisting or damp-proof.	813	18th March 1870	William Austin.
Improvements in the treatment of hides and skins in tanning and otherwise utilizing all portions or pieces thereof, and in the treatment of goods already tanned. - - - - - (*rendering waterproof.*)	863	24th March 1870	Henry Richardson Fanshawe. William Henry Smith.
Improved means for rendering water-tight dock gates, ships' ports or other like openings, also applicable to windows, doors and other like openings.	912	29th March 1870	Robert Saunders.
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation and preserving wood and other materials. (*rendering almost incombustible.*)	986	4th April 1870	Achille Thomas Anquetil.
Manufacture of waterproof garments - -	1026	7th April 1870	Charles Montagu.
Safes, chests, bank vaults and other like structures (*Communicated by Theodore Hyatt.*)	1289	5th May 1870	John Henry Johnson.
Manufacture and application of a composition or compositions for preserving the surfaces of walls, metals, wood and other materials. (*protecting from damp.*)	1379	14th May 1870	Prosper Pimont.
Construction of ships and other navigable vessels -	1404	16th May 1870	Joseph Needham.
Manufacture of embossed fabrics in imitation of quilting, and applicable especially to the making of ornamental petticoats. (*waterproof.*)	1567	28th May 1870	Robert John Collins.
Treatment of slag and other vitreous material - (*for filling fire-proof safes.*) (*Communicated by Henry Baldwin, junior.*)	1644	7th June 1870	George Tomlinson Bousfield.
Improvements in the construction and arrangement of horticultural and other buildings or erections or structures, and in the means and appliances for heating the same. (*rendering watertight.*)	1870	1st July 1870	William Port Ayres.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WATERPROOF, &c.—*continued.*			
An improved waterproof fabric, applicable for rugs, carpets, tents and outer coverings or wrappers.	1950	9th July 1870	Donald Nicoll.
An improved fire-proof composition for safes and other depositories.	1992	14th July 1870	Charles John Curtis. Augustin Fiddes.
Improvements in waterproof garments, which improvements are also applicable to garments in general.	2336	25th Aug. 1870	William Bullock.
Manufacture of 'brattice cloths' used in coal and other mines.	2490	15th Sept. 1870	Illius Augustus Timmis.
Improvements in saddle-cloths and horse clothing and blankets, and in ponchos or other coverings for man and beast. (*and waterproofing.*) (*Communicated by Robert Spencer.*)	2743	18th Oct. 1870	William Edward Newton.
An improved mode of colouring india-rubber and other like waterproof fabrics or materials.	2761	20th Oct. 1870	Alfred Ford.
An improved compound for the lubrication of wool and other similar animal material in their processes of manufacture and in preventing and arresting the combustion of such materials.	2810	25th Oct. 1870	John James Lundy.
Preparation and use of peat or turf, and bituminous, resinous and ligneous substances, as fuel and for other purposes. (*waterproof product.*)	2831	27th Oct. 1870	Jacob Geoghegan Willans.
Boots and shoes (*making soles waterproof.*)	2880	1st Nov. 1870	Thomas Baker.
An improved metallic composition for roofing linings, pipes and other purposes. (*water-tight floors, damp walls.*) (*Communicated by David Johnson Millard.*)	2935	7th Nov. 1870	William Edward Newton.
An improved means of rendering casks and other vessels air and water tight.	2987	15th Nov. 1870	John Somervell.
An improvement in the manufacture of pavements, waterproof linings and coverings.	3125	29th Nov. 1870	Henry Slingsby Bethell.
Compounds for waterproofing textile fabrics and other surfaces.	3200	6th Dec. 1870	John Macintosh.
Manufacture of non-inflammable brattice cloths	3348	22nd Dec. 1870	Oswald Brooke. Alfred William Read.
WATERWHEELS AND ENGINES; HYDRAULIC MOTIVE-POWER.			
An improved windmill which when divested of a portion of its regulating parts can also be used as a water-wheel or as a ship's propeller.	281	31st Jan. 1870	Charles Mahler.
An improved method of and apparatus for producing and utilizing a fall of water. (*turbine or hydraulic motor.*) (*Communicated by Doctor Heiman Sanders-Ezn.*)	557	25th Feb. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WATERWHEELS, &c.—*continued.*			
A new or improved rotary engine	584	28th Feb. 1870	Abraham Ripley.
Turbine water-wheels (*Communicated by Henry Allen Chadwick.*)	870	24th March 1870	William Robert Lake.
Improvements in steering gear and in machinery for starting, stopping and reversing heavy steam-engines and turrets and for discharging cargo. (*hydraulic apparatus.*)	1018	7th April 1870	Andrew Betts Brown.
Improved means or apparatus for obtaining motive-power.	1223	28th April 1870	James Lee.
Valves applicable to steam or water pressure	1768	21st June 1870	Thomas Common Brown.
Steam-engines (*hydraulic engines.*)	1818	27th June 1870	Vincent Rastouin.
Obtaining motive-power from a fall of water	2177	4th Aug. 1870	Joaquino Antonio de Macedo.
Machinery or apparatus for obtaining and applying motive-power from the rise and fall of the tides.	2216	10th Aug. 1870	Thomas Stephens. Charles Stephens.
Improvements in steam, air and gas and in fluid or hydraulic engines.	2554	23rd Sept. 1870	William Firth.
See also "GOVERNORS."			
WEARING-APPAREL, MILITARY OUTFITS; TAILORS' TRIMMINGS.			
A new or improved wrapping rug for use in travelling.	146	18th Jan. 1870	Henry Barton Read.
Certain parts of wearing apparel (*trousers.*)	268	29th Jan. 1870	William White.
Weaving of seamless articles (*trousers, jerkins, &c.*)	270	29th Jan. 1870	Samuel Whitehall Mulloney.
Improvements in the manufacture of trimmings or edgings and in apparatus in connection therewith.	354	7th Feb. 1870	Hesketh Hughes.
Railway and other wrappers	451	16th Feb. 1870	Allan Stewart.
Improvements in the manufacture of yarns and fabrics containing horse hair, and in means or methods for shaping and utilizing fabrics containing the same or analogous stiffening material. (*stiffening for coats.*)	604	1st March 1870	Henry Hayward.
Diving dresses	638	4th March 1870	Henry Siebe. William Augustus Gorman. Thomas Forster.
Waterproof garments	646	4th March 1870	Samuel Cohen.
Improvements in the manufacture of plait and in fastenings therefor, which improvements are applicable for jewellery and other purposes. (*for waistbands, &c.*)	952	31st March 1870	Robert Atkin.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WEARING-APPAREL, &c.—*continued.*			
Manufacture of waterproof garments - -	1026	7th April 1870	Charles Montagu.
An improved fastening for leggings, gaiters, stays and corsets.	1417	17th May 1870	Bernard Birnbaum.
Fastenings applicable to purses and such like articles. (*gaiters or leggings.*) (*Communicated by Paul Sormany.*)	1450	9th May 1870	Joseph Schloss.
Belts or suspenders for wearing apparel - - (*for trousers.*)	1620	4th June 1870	Edwin Heycock.
An improved waterproof fabric applicable for rugs, carpets, tents and outer coverings or wrappers.	1950	9th July 1870	Donald Nicoll.
An improved method of and apparatus for measuring the human body and draughting patterns for coats.	2142	1st Aug. 1870	George Schädler.
Railway and other wrappers - - -	2186	5th Aug. 1870	Allan Stewart.
Improved manufacture of trimmings, edgings, ruchings, plaiting and other similar goods.	2300	20th Aug. 1870	Heaketh Hughes.
Improvements in waterproof garments, which improvements are also applicable to garments in general.	2336	25th Aug. 1870	William Bullock.
Improvements in the manufacture of wearing apparel, such as coats, vests, trousers, jackets, shirts, drawers and other similar articles.	2431	8th Sept. 1870	Matthew Lawson.
Improvements in the manufacture of twilled fabrics and in the application of such fabrics to the manufacture of various articles of wearing apparel and for upholstery purposes.	2446	9th Sept. 1870	Joseph James Barnett.
A new or improved suit or dress and fittings for saving life in water.	2510	17th Sept. 1870	John Benjamin Stoner.
Improvements in the construction of ships of war and fortifications, the said improvements being also applicable to garments to be worn by soldiers and sailors in war time.	2606	30th Sept. 1870	John Eiflander.
Improvements in saddle cloths and horse clothing and blankets, and in ponchos or other coverings for man and beast. (*Communicated by Robert Spencer.*)	2743	18th Oct. 1870	William Edward Newton.
Travelling wrappers - - - -	2848	29th Oct. 1870	William Joseph Osborne
An improved camp-bed which may be used for several various useful purposes. (*or outer garment.*)	2851	29th Oct. 1870	Auguste Lafage.
An improved mode of protecting troops under fire (*spade used as breast plate.*)	2860	31st Oct. 1870	William Shepard Wetmore.
A trousers protector or guard adapted more particularly for muddy weather.	2881	1st Nov. 1870	Frederic Hunt.
Manufacture of padded quilts and other articles - (*quilted skirts and other wearing apparel.*)	2901	3rd Nov. 1870	Henry Armitage.
Manufacture of padded or wadded quilts or other padded or wadded articles for wearing apparel or other purposes. (*see* "FULLING.")	2961	10th Nov. 1870	Benjamin Lockwood.
Improved life-preserving clothing - - (*Communicated by Clark Spencer Merriman.*)	3214	7th Dec. 1870	Alexander Melville Clark.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WEARING-APPAREL, &c.—*continued.*			
A new cloak for military and other purposes, which can also be used as a sheet or covering.	3372	24th Dec. 1870	Alexander Carlyle Bell.
Improvements in the manufacture of felted fabrics and in the machinery or apparatus employed therein. (*for wrappers, overalls, &c.*) (*Communicated by Robert Spencer.*)	3404	31st Dec. 1870	William Edward Newton.
See also "BUTTONS." "GLOVES." "HATS." "SHIRTS." "PETTICOATS."			
WEAVING, BRAIDING, PLATTING; PREPARING FOR WEAVING.			
I.—Sizing, Warping, Beaming and Preparing Yarns for Weaving.			
Certain improvements in sizing machines	37	5th Jan. 1870	William Scowcroft Lowe.
Machines for sizing yarn (*Communicated by William Lancaster.*)	145	18th Jan. 1870	Henry Bernoulli Barlow.
An improvement in the manufacture of quilts, counterpanes, table or toilet covers and other similar fabrics. (*drawing in.*)	359	8th Feb. 1870	Henry Bond. Joseph Riley.
Improvements in the manufacture of size and in the application of a certain material for conditioning cotton and other fibrous substances.	375	9th Feb. 1870	Christopher Crossley. Robert Whipp. Thomas Crossley.
Improvements in machinery or apparatus for washing or scouring and drying wool and other fibrous materials and yarns or threads. (*drawing warps.*)	386	9th Feb. 1870	John Petrie, junior.
Machinery or apparatus for dressing warps of wool or other fibrous substances and twine.	392	10th Feb. 1870	William Houghton. John Bapty.
Machinery or apparatus for drying woven fabrics and yarns or threads, and for "ageing" woven fabrics. (*after sizing.*)	527	23rd Feb. 1870	James Farmer.
Warping or beaming and sizing machines	555	25th Feb. 1870	John Bullough.
Tape-dressing machines	611	2nd March 1870	William Scowcroft Lowe.
Improvements in the treatment or preparation of yarns for weaving and in machinery or apparatus connected therewith.	656	5th March 1870	Samuel Howard Stott.
Sizing machines	764	15th March 1870	Edward Dugdale. Joseph Dugdale.
Looms for weaving, partly applicable to beaming machines.	772	16th March 1870	Richard Tonge.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WEAVING, &c.—*continued.*			
Manufacture of size - - - - (*for dressing fibrous substances.*)	1020	7th April 1870	Christopher Crossley. Robert Whipp. Thomas Crossley.
Tape-dressing or sizing machines - -	1308	7th May 1870	William Scowcroft Lowe.
Sizing machines - - - -	1310	7th May 1870	John Bullough.
An improved means or method of beaming warps or supplying warp in the weaving of fabrics, for which some of the warp threads require to be of a different tension to the others.	1399	16th May 1870	Richard Longden Hattersley.
Machinery or apparatus for washing and drying wool, yarn and other fibrous materials. - (*or sizing warps.*)	1511	25th May 1870	John McNaught. William McNaught.
Tape-dressing or sizing machines - -	1526	26th May 1870	John Bullough.
Machinery or apparatus employed in the process of bleaching, scouring, dyeing and sizing warps or yarns and fabrics. - - -	1548	27th May 1870	John Dargue. William Dargue.
Certain improvements in machinery or apparatus used in sizing and dressing yarn.	1575	30th May 1870	Colin Mather.
An improved stop motion applicable to machinery or apparatus employed in bleaching, scouring, dyeing, sizing and dressing warps, yarns and fabrics, also in carding and combing wool or other fibrous substances. - - - -	1654	8th June 1870	William Dewhirst. Thomas Dewhirst. Joseph Dewhirst.
Slasher sizing machines - - - (*Communicated by Daniel Hussey and Frederick Allen Leigh.*)	1767	21st June 1870	John Bullough.
Certain improvements in the preparation of "cops" and "healds" employed in the manufacture of woven fabrics. - - - - (*applying size to cop tips.*)	1785	23rd June 1870	Thomas Richmond. Christopher Catlow.
Improvements in sizing machines and in the method of sizing yarns.	2461	12th Sept. 1870	John Lancaster.
An improved apparatus for damping textile threads or yarns in the processes of spinning, winding, reeling and warping or other similar processes.	2623	3rd Oct. 1870	Edmund Leach.
Dressing or sizing warp threads or yarns of wool, cotton and other fibrous materials. (*Communicated by Louis Schönherr.*)	2693	12th Oct. 1870	Edward Thomas Hughes.
Machinery or apparatus for washing, opening and drying wool and other fibrous materials, and washing yarns. - - - - (*sizing warps.*)	2772	21st Oct. 1870	John McNaught. William McNaught, jun.
Improvements in dressing yarns or warps and in the mechanism or apparatus employed therefor. (*Communicated by John Hutcheson.*)	3111	26th Nov. 1870	Saint John Vincent Day.
Certain improvements in self-stopping beam warping machines.	3270	14th Dec. 1870	William Henry Hacking.
Improved compositions for sizing, dressing and finishing threads, yarns, textile fabrics and paper.	3273	14th Dec. 1870	Elijah Slack.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WEAVING, &c.—*continued.*			
XI.—Weaving Plain, Figured and Double Fabrics; Jacquards and Looms; Woven Fabrics.			
Looms for weaving	13	3rd Jan. 1870	Edwin Knowles. George Hartley.
Certain improvements in the manufacture of counterpanes, quilts, quiltings, toiletings and other similar fabrics.	24	4th Jan. 1870	Thomas Nuttall. Richard Nuttall.
Looms for weaving (*Communicated by Isaac Edwin Newton.*)	159	19th Jan. 1870	Edward Thomas Hughes.
Looms for weaving textile fabrics	224	25th Jan. 1870	William Hunter.
Looms for weaving	254	28th Jan. 1870	Richard Haworth. Edwin Woodcock. Joseph McCabe.
Weaving of seamless articles	270	29th Jan. 1870	Samuel Whitehall Mulloney.
Looms for weaving	286	1st Feb. 1870	James Bullough.
An improvement in the manufacture of quilts, counterpanes, table or toilet covers and other similar fabrics.	359	8th Feb. 1870	Henry Bond. Joseph Riley.
Looms for weaving	360	8th Feb. 1870	David Rorison. Robert Gilchrist Finlay.
Certain improvements in looms for weaving	390	10th Feb. 1870	William Hadfield.
Looms for weaving (*Communicated by John A. Bassett and John Robinson Norfolk.*)	401	10th Feb. 1870	William Robert Lake.
Looms for weaving	405	11th Feb. 1870	David Dalglish.
Certain improvements in looms for weaving	448	16th Feb. 1870	William Smith.
Improvements in the manufacture of hair cloth and other fabrics in which the weft is inserted in separate lengths and in looms or machinery for weaving such fabrics. (*Communicated by Isaac Lindsley.*)	568	25th Feb. 1870	Peter Joel Livsey.
Looms for weaving	574	26th Feb. 1870	Alexander Hennah Martin.
Looms for weaving	632	3rd March 1870	John Clegg.
Looms for weaving	686	8th March 1870	James Lee Norton.
Jacquard apparatus	740	14th March 1870	John Morris.
Looms for weaving	761	15th March 1870	John Carter Ramsden.
Looms for weaving partly applicable to beaming machines.	772	16th March 1870	Richard Tonge.
Improvements in jacquard mechanism for weaving and other purposes, parts of which improvements are also applicable for playing musical instruments.	838	21st March 1870	Alfred Barlow.
Manufacture of crape	864	24th March 1870	Robert Henry Kay. Alfred Thomas Richardson.
Looms for weaving	908	28th March 1870	John Storey Davies. Walter Edward Yates.
Looms for weaving	936	31st March 1870	Mark Knowles. James Conlong. William Frankland.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WEAVING, &c.—*continued.*			
Method of working check straps in looms for weaving.	956	1st April 1870	Charles Braham Parkinson. John Metcalf.
Looms for weaving	992	5th April 1870	Thomas Smith.
Manufacture of quilts, toiletings and other figured fabrics.	1045	9th April 1870	William Nelson.
Looms (*Communicated by George Crompton.*)	1048	9th April 1870	Alexander Horace Brandon
Jacquard machinery	1049	9th April 1870	Aaron Mosley.
Looms for weaving	1054	9th April 1870	Samuel Cunliffe Lister.
Looms for weaving (*Communicated by James Brierly.*)	1093	14th April 1870	William Robert Lake.
Looms for weaving	1134	19th April 1870	Richard Cherry.
Certain improvements in looms for weaving	1150	20th April 1870	William Smith.
Looms for weaving	1208	27th April 1870.	Thomas Wrigley.
Manufacture of crape	1220	28th April 1870	Robert Henry Kay. Alfred Thomas Richardson.
Improvements in textile fabrics for book covers and in weaving the same.	1260	3rd May 1870	Alfred Barlow. Henry Browne.
Looms for weaving	1265	3rd May 1870	John Ormerod.
Looms for weaving	1423	18th May 1870	Thomas Pilkington Young. James Thomasson.
Manufacture of toilet quilts, toilet or table covers, quiltings and the like articles.	1424	18th May 1870	George Hodgkinson.
Improvements in looms for weaving and in shuttles for the same and for other machines. (*Communicated by Hamilton E. Towle.*)	1431	18th May 1870	William Robert Lake.
Improvements in the manufacture or production of lace made on lace machines employed in making figured fabrics, and in the machinery or apparatus employed therein.	1434	18th May 1870	Frederick Edwards.
Looms for weaving (*Communicated by Erastus Brigham Bigelow.*)	1437	18th May 1870	George Tomlinson Bousfield.
Certain improvements in looms for weavings	1440	19th May 1870	John Diggle. Hugh Booth.
Manufacture of woven fabrics (*poplinettes or Japanese silks.*)	1443	19th May 1870	James Smithies. John Smithies.
Looms for weaving	1453	19th May 1870	William Lawrence Mitchell.
Looms for weaving	1530	26th May 1870	Benjamin Cooper.
Looms for weaving (*Communicated by Charles Piat.*)	1532	26th May 1870	William Edward Newton.
Looms for weaving (*Communicated by James Lyall.*)	1578	30th May 1870	Alfred Vincent Newton.
Improvements in woven fabrics applicable for towelling and other purposes, and in the method of and apparatus for weaving the same.	1614	4th June 1870	William Haslam.
Machinery for shedding power loom warps	1645	7th June 1870	John Morris.
An improvement in towels, rubbers and wipers	1678	10th June 1870	Henry Richardson Fawshawe.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WEAVING, &c.—*continued.*			
Looms for weaving	1719	16th June 1870	William Gadd. John Moore.
Looms for weaving	1731	17th June 1870	William Hadfield.
Improvements applicable to looms for weaving (*Communicated by Louis Raoul Bazin.*)	1737	17th June 1870	Henry Edward Newton.
Looms for weaving	1876	2nd July 1870	Francis Johnston. Isaac Bradshaw.
Looms for weaving	1921	7th July 1870	Isaac Whitesmith.
Shedding warps in the process of weaving	1925	7th July 1870	David Lord.
Certain improvements in looms for weaving	1938	8th July 1870	John Kershaw.
Warp tension and let-off mechanism for power-looms. (*Communicated by Erastus Brigham Bigelow.*)	1955	11th July 1870	George Tomlinson Bousfield.
Looms for weaving	1957	11th July 1870	John Crossley.
Improvements in carpets and in machinery or apparatus for manufacturing the same. (*Communicated by William Wallace and Charles McAllister.*)	1961	13th July 1870	John Henry Johnson.
Looms for weaving	1964	14th July 1870	Joseph Redford.
Jacquard apparatus	2056	21st July 1870	Frederick James Newton. John Mosley.
Looms for weaving	2065	23rd July 1870	William Lawrence Mitchell.
Looms for weaving	2127	29th July 1870	John Carter Ramsden.
Manufacture of leather for picking bands, lathes, and other articles requiring leather of an extraordinary toughness, durability and strength. (*Communicated by Messieurs Klemm, Brothers.*)	2210	9th Aug. 1870	Edward Moss.
Looms for weaving (*shedding motion.*)	2232	11th Aug. 1870	John Dodgeon. William Atkinson.
Certain improvements in looms for weaving	2234	11th Aug. 1870	John Storey Davies. Walter Edward Yates.
Improved machinery for preventing floats in weaving	2263	15th Aug. 1870	Roger Charnley.
Certain improvements in looms for weaving	2355	27th Aug. 1870	George Steward Hazlehurst.
Looms for weaving hats (*Communicated by John Van Dussen Reed.*)	2402	2nd Sept. 1870	Alexander Melville Clark.
An improved screen-wire for dressing wheat and other grain, which web is also applicable to dressing sieves generally, and for the floors of malt and other drying kilns. (*weaving the web.*)	2429	8th Sept. 1870	William Silcock.
Power looms	2439	9th Sept. 1870	Thomas Bell. William Walton Urquhart. Joseph Lindsay.
Improvements in the manufacture of twilled fabrics, and in the application of such fabrics to the manufacture of various articles of wearing apparel and for upholstery purposes.	2446	9th Sept. 1870	Joseph James Barnett.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WEAVING, &c.—*continued.*			
Improvements in the manufacture of certain descriptions of fabrics and in looms for weaving the same and other fabrics.	2465	13th Sept. 1870	Edward Lord.
Certain improvements in looms for weaving -	2483	15th Sept. 1870	Thomas Pilkington Young. James Thomasson.
Looms for weaving - - - - -	2488	15th Sept. 1870	George Lucas.
Improvements in the manufacture or production of patterned fabrics and in the machinery or apparatus employed therein.	2500	16th Sept. 1870	Frederick Edwards.
Looms for weaving - - - - -	2523	20th Sept. 1870	Riley Livesay Haworth.
Machinery or apparatus for the manufacture of lint and lint bandages.	2539	22nd Sept. 1870	Samuel Shaw Brown.
New improved mechanism for weaving without cards, which mechanism is applicable to all looms. (*Communicated by Count Peter Ambjorn Sparre.*)	2644	5th Oct. 1870	Hunter Henry Murdoch.
Looms for weaving - - - - -	2648	6th Oct. 1870	Humphrey Bracewell. John Bulcock. George Whittaker.
Certain improvements in looms for weaving -	2669	8th Oct. 1870	Joseph Holding.
Certain improvements in looms for weaving -	2682	11th Oct. 1870	James Kenyon.
Looms for weaving - - - - -	2689	11th Oct. 1870	John Hodgson. James Broadley.
Improvements in the manufacture of boots and shoes or other coverings for the feet, parts of which improvements are also applicable in the manufacture of millstraps or bands, harness, hose, pipes and other similar articles, and in the machinery, apparatus or means to be used for effecting such purposes. (*picking arms for looms.*)	2698	12th Oct. 1870	Thomas White.
Looms for weaving - - - - -	2703	13th Oct. 1870	William Greaves. George Greenwood.
Looms for weaving - - - - -	2735	18th Oct. 1870	Benjamin Blakey.
Manufacture of woven bags - - -	2753	19th Oct. 1870	James Whitelegge Naylor.
Looms for weaving - - - - (*Communicated by Enoch Provolt Terrel.*)	2862	31st Oct. 1870	William Robert Lake.
Manufacture of sail cloth and such like fabrics -	2926	5th Nov. 1870	George Doig Nicol.
Looms for weaving - - - - -	2962	10th Nov. 1870	Thomas Cooper. John Cooper. Frederick Cooper. Joseph Ogden.
Manufacture of lint for surgical, medical and other purposes.	3042	21st Nov. 1870	Arthur Chilver Tupper.
Manufacture of cambrics - - -	3044	21st Nov. 1870	William Henry Fletcher.
Looms for weaving - - - - -	3094	25th Nov. 1870	James Robinson. John Peel.
Looms for weaving - - - - -	3140	30th Nov. 1870	John Keighley. Richard Shephard. James Robinson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WEAVING, &c.—*continued.*			
Manufacture or production of plain and fancy nets and laces. (*or weavings.*)	3158	1st Dec. 1870	William Carter.
Improvements in and methods or means of weaving reps.	3298	17th Dec. 1870	William Wilson.
Looms for weaving	3312	19th Dec. 1870	James Denby Lee. James Crabtree.
Power looms	3352	22nd Dec. 1870	Arthur Francis Stoddard. Charles Bine Renshaw.
Looms for weaving (*dobby looms.*)	3362	23rd Dec. 1870	John Anderton. George Anderton.
III.—Weaving Carpets, Velvets and other Pile and Terry Fabrics; Carpet Looms.			
Weaving plain and elastic terry fabrics	7	1st Jan. 1870	Henry Turner, the younger.
Mechanism or apparatus for producing a piled surface.	167	19th Jan. 1870	John Carter Ramsden.
Improvements in the manufacture of carpets and in the machinery employed therein.	402	10th Feb. 1870	Archibald Turner.
Improvements in the manufacture of carpets, and in the machinery to be employed therein.	423	12th Feb. 1870	Martin Brown.
Clips or shears for clipping or shearing horses and other animals, which are also applicable for other purposes. (*for dressing carpets, velvets, &c. in their manufacture.*) (*Communicated by Auguste Lengelée, Leon Boutlier and Charles Vincent.*)	508	21st Feb. 1870	Thomas James Smith.
Manufacture of looped fabrics	816	19th March 1870	Thomas Keely.
Looms for weaving (*pile fabrics.*)	936	31st March 1870	Mark Knowles. James Conlong. William Frankland.
Looms for weaving (*pile fabrics.*)	1054	9th April 1870	Samuel Cunliffe Lister.
Weaving silk and cotton velvets	1136	19th April 1870	Samuel Cunliffe Lister.
Certain improvements in looms for weaving (*terry and cut pile fabrics, inserting and withdrawing wires.*)	1150	20th April 1870	William Smith.
Manufacture of piled fabrics	1229	29th April 1870	Thomas Thorpe.
Double pile fabrics (*from cow hair yarns.*)	1302	6th May 1870	Samuel Cunliffe Lister. John Robinson.
Manufacture of piled fabrics	1461	20th May 1870	Thomas Hodson.
Improvements in carpets and in machinery or apparatus for manufacturing the same. (*Communicated by William Wallace and Charles McAllister.*)	1981	13th July 1870	John Henry Johnson.
Manufacture of carpets	2059	21st July 1870	Arthur Howard Wharton.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WEAVING, &c.—*continued.*			
Manufacture of elastic fabrics - - - (*terry gusset webs.*)	2072	22nd July 1870	Archibald Turner.
Machinery employed in the manufacture of carpets	2223	10th Aug. 1870	Archibald Turner.
Improvements in the manufacture of carpets and in the machinery to be employed therein.	2247	12th Aug. 1870	Martin Brown.
Manufacture of elastic fabrics - - -	2272	16th Aug. 1870	Archibald Turner. Luke Turner.
Improvements in the manufacture or production of patterned fabrics, and in the machinery or apparatus employed therein.	2500	16th Sept. 1870	Frederick Edwards.
Improvements in Brussels and in tapestry carpets (*Communicated by George Crompton.*)	2636	5th Oct. 1870	John Garrett Tongue.
Improvements in the manufacture of terry or cut-pile fabrics, and in the application of such fabrics to the manufacture of slippers, shoes, bags and other shaped articles.	2788	22nd Oct. 1870	Archibald Turner.
Manufacture of carpets and other pile fabrics -	2914	4th Nov. 1870	Francis Best Fawcett.
Looms for weaving Brussels carpeting - - (*Communicated by George Crompton.*)	3059	22nd Nov. 1870	John Garrett Tongue.
IV. — Knitting; Lace Making; Stocking Frames; Warp Fabrics; Nets and Meshed Fabrics.			
Certain improvements in machines for manufacturing fishing and other nets. (*Communicated by Messieurs Coevoet and Dawson.*)	23	4th Jan. 1870	Henry Bernoulli Barlow.
Machinery or apparatus employed in the manufacture of looped or knitted fabrics.	62	7th Jan. 1870	Thomas Coltman.
An improved knitting machine - - - (*Communicated by The New Haven Family Knitting Machine Company (Incorporated).*)	105	12th Jan. 1870	Alfred Vincent Newton.
Knitting-machines - - - -	220	25th Jan. 1870	George Edward Harding. Peter Wright.
Construction of knitting machines - - (*Communicated by Henry Von Hartz and Julius Feiss.*)	326	4th Feb. 1870	Alfred Vincent Newton.
An improved apparatus for producing rotary motion (*for knitting machines.*)	615	2nd March 1870	Charles Ernest de Lorière.
Machinery for the manufacture of knitted fabrics -	918	29th March 1870	Charles Cotton.
Manufacture of lace in twist lace machines - -	1046	9th April 1870	Henry Mallet. Cornelius Russell.
Manufacture of lace in twist lace machines -	1088	13th April 1870	Francis William Brooksbank.
Knitting machines - - - - (*Communicated by Edward Kelleran Harding.*)	1101	4th April 1870	William Robert Lake.
Improvements in the manufacture of looped or knitted fabrics and in the machinery or apparatus employed therein.	1105	4th April 1870	William Cotton.
Machinery for knitting stockings or various other articles (*Partly communicated by George M. Patten.*)	1171	22nd April 1870	James Rand Clark.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WEAVING, &c.—*continued.*			
Manufacture of lace made on bobbin net or twist lace machines.	1199	26th April 1870	Thomas Wright. Isaac Fox.
Manufacture of ornamented net or lace	1201	26th April 1870	Richard Birkin, junr.
Machinery for knitting looped fabrics	1324	9th May 1870	John Pepper.
Machines for and the manufacture of knitted goods	1428	18th May 1870	David McColley Weston.
Improvements in the manufacture or production of lace made on lace machines employed in making figured fabrics, and in the machinery or apparatus employed therein.	1434	18th May 1870	Frederick Edwards.
Knitting machines (*Communicated by Mr. Germain, junior.*)	1577	30th May 1870	William Edward Gedge.
Improvements in and applicable to knitting machines.	1608	3rd June 1870	Alphonse Ségard.
Lace machines	1643	7th June 1870	Edwin Doughty.
Improvements in the manufacture of woven gauze fabrics made on bobbin net or twist lace machines, and in the machinery or apparatus employed therein.	1811	25th June 1870	William Martin.
Manufacture of lace in twist lace machines	1911	6th July 1870	Frederic Rainford Ensor.
Knitting machines (*Communicated by The Hinkley Knitting Machine Company.*)	2180	4th Aug. 1870	William Robert Lake.
Knitting machines (*Communicated by John Lee, Mark Lee and William Carter.*)	2250	12th Aug. 1870	Alexander Melville Clark.
Knitting machines (*Communicated by William Henry Abel.*)	2323	23rd Aug. 1870	William Robert Lake.
Improvements in the manufacture of knitted fabrics, and in machinery employed therefor. (*Communicated by Henry Augustus Clark.*)	2410	3rd Sept. 1870	George Haseltine.
Improvements in twist lace machines, and in the manufacture of lace made on twist lace machines.	2467	13th Sept. 1870	William Tilson.
Improvements in the manufacture or production of patterned fabrics, and in the machinery or apparatus employed therein.	2500	16th Sept. 1870	Frederick Edwards.
An improved safety knitting sheath	2713	14th Oct. 1870	Charlotte Mansel.
Manufacture of nets used for ladies' hair	3092	25th Nov. 1870	William Carter.
Looms for weaving (*looped fabrics.*)	3094	25th Nov. 1870	James Robinson. John Peel.
Manufacture or production of plain and fancy nets and laces.	3158	1st Dec. 1870	William Carter.
V.—Weaving Fringes, Ribbons, Producing Braid; Platting.			
Improved apparatus for producing fringe upon woven fabrics. (*Communicated by Nathaniel Wheeler.*)	395	10th Feb. 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WEAVING, &c.—*continued.*			
Improvements in the manufacture of yarns and fabrics containing horse hair, and in means or methods for shaping and utilizing fabrics containing the same or analogous stiffening material. (*manufacture of cords.*)	604	1st March 1870	Henry Hayward,
Improvements in the manufacture of plait and in fastenings therefor, which improvements are applicable for jewellery and other purposes.	952	31st March 1870	Robert Atkin.
Looms for weaving - - - (*velvet ribbons face to face.*)	1054	9th April 1870	Samuel Cunliffe Lister.
Braiding machines - - - -	2012	16th April 1870	Nathaniel Jones Amies.
Improvements in the manufacture or production of patterned fabrics, and in the machinery or apparatus employed therein.	2500	16th Sept. 1870	Frederick Edwards.
Small-ware looms - - - -	2837	28th Oct. 1870	William Gadd. John Moore.
Improvements in forming fringes on textile fabrics, and in the machinery or apparatus employed therefor.	2906	16th Nov. 1870	Thomas Henderson.
Forming or constructing fringes on textile fabrics, and in the machinery or apparatus employed therefor.	3012	17th Nov. 1870	John Collins.
Looms for weaving narrow fabrics - -	3305	17th Dec. 1870	Samuel Cunliffe Lister.
Looms for weaving - - - - (*ribbon looms.*)	3389	29th Dec. 1870	Samuel Cunliffe Lister.
VI.—Shuttles and Weft Forks.			
Loom for weaving - - - - (*Communicated by John A. Bassett and John Robinson Norfolk.*)	401	10th Feb. 1870	William Robert Lake.
An improvement applicable to the "weft forks" used in power looms for weaving.	526	23rd Feb. 1870	Thomas Grimshaw.
Improvements in looms for weaving and in shuttles for the same, and for other machines. (*Communicated by Hamilton E. Towle.*)	1431	18th May 1870	William Robert Lake.
Looms for weaving - - - (*moveable case carrying the weft.*) (*Communicated by James Lyall.*)	1578	30th May 1870	Alfred Vincent Newton.
Looms for weaving - - - -	1921	7th July 1870	Isaac Whitesmith.
Improvements in machinery for winding cops and in shuttles for weaving cops.	3185	3rd Dec. 1870	John Combe.
VII.—Temples, Pickers, Healds and Reeds.			
Certain improvements in self-acting temples for looms. - - - -	5	1st Jan. 1870	John Elce. Richard Bond.
Looms for weaving - - - - (*Communicated by Isaac Edwin Newton.*)	159	19th Jan. 1870	Edward Thomas Hughes.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WEAVING, &c.—*continued.*			
Construction of pickers for looms	197	22nd Jan. 1870	Robert Fielden, junior. Thomas Fielden.
Construction of pickers for looms	357	8th Feb. 1870	James Kenyon.
Looms for weaving (*Communicated by John A. Bassett and John Robinson Norfolk.*)	401	10th Feb. 1870	William Robert Lake.
Looms for weaving (*reeds.*)	908	28th March 1870	John Storey Davies. Walter Edward Yates.
"Temples" employed in looms for weaving	916	29th March 1870	Joseph Holding. James Eccles. William Birch Cooper.
Looms for weaving (*metallic harness.*) (*Communicated by Charles Piat.*)	1532	26th May 1870	William Edward Newton.
Looms for weaving (*reed.*)	1719	16th June 1870	William Gadd. John Moore.
Certain improvements in the preparation of "cops" and "healds" employed in the manufacture of woven fabrics.	1785	23rd June 1870	Thomas Richmond. Christopher Catlow.
Manufacture of reeds employed in looms for weaving	2079	23rd July 1870	Edward Dittrich. Frederick Millo. Julius Leidhold.
Certain improvements in looms for weaving (*construction of dents in the reed.*)	2234	11th Aug. 1870	John Storey Davies. Walter Edward Yates.
Looms for weaving (*pickers.*)	3140	30th Nov. 1870	John Keighley. Richard Shephard. James Robinson.
VIII.—Letting-off and Taking-up Motion; Stopping Looms.			
Knitting-machines (*stop.*)	220	25th Jan. 1870	George Edward Harding. Peter Wright.
Looms for weaving, partly applicable to beaming machines. (*letting-off and taking-up motions.*)	772	16th March 1870	Richard Tonge.
Looms for weaving (*letting-off motion.*)	908	28th March 1870	John Storey Davies. Walter Edward Yates.
Looms for weaving (*stopping.*)	936	31st March 1870	Mark Knowles. James Conlong. William Frankland.
Looms (*stopping the loom.*) (*Communicated by George Crompton.*)	1048	9th April 1870	Alexander Horace Brandon.
Looms for weaving (*letting off the warp.*)	1134	19th April 1870	Richard Cherry.
Machines for and the manufacture of knitted goods. (*stopping the machines.*)	1428	18th May 1870	David McColley Weston.
Improvements in looms for weaving, and in shuttles for the same and for other machines. (*Communicated by Hamilton E. Towle.*)	1431	18th May 1870	William Robert Lake.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WEAVING, &c.—*continued.*			
Looms for weaving - - - - (*let-off mechanism.*) (*Communicated by Erastus Brigham Bigelow.*)	1437	18th May 1870	George Tomlinson Bousfield.
Looms for weaving - - - - (*stopping the loom.*) (*Communicated by Charles Piat.*)	1532	26th May 1870	William Edward Newton.
Looms for weaving - - - - (*letting off.*)	1731	17th June 1870	William Hadfield.
Warp tension and let-off mechanism for power looms. (*Communicated by Erastus Brigham Bigelow.*)	1955	11th July 1870	George Tomlinson Bousfield.
Looms for weaving - - - - (*uptake motion.*)	2085	23rd July 1870	William Lawrence Mitchell.
Let-off mechanism of looms for weaving - - (*Communicated by Daniel Long and John Preston.*)	2154	2nd Aug. 1870	William Robert Lake.
Machinery employed in the manufacture of carpets (*weft-stopping apparatus.*)	2223	10th Aug. 1870	Archibald Turner.
Looms for weaving - - - - (*letting-off motion.*)	2232	11th Aug. 1870	John Dodgeon. William Atkinson.
Certain improvements in looms for weaving - (*delivering threads from the warp beam.*)	2355	27th Aug. 1870	George Steward Haslehurst.
Looms for weaving - - - -	2488	15th Sept. 1870	George Lucas.
Looms for weaving - - - - (*break.*)	2703	13th Oct. 1870	William Greaves. George Greenwood.
WEIGHING-MACHINES, SCALES, INDICATING WEIGHT.			
Instruments for measuring fluid or other pressure or weight.	20	3rd Jan. 1870	Frederick Foster.
Scale beams - - - - -	158	19th Jan. 1870	Benjamin Clarkson. Samuel Charlton.
Improvements in apparatus for the passage and control of cables and other chains, and in apparatus for auxiliary propulsion. (*grab links for "steel yards."*)	175	20th Jan. 1870	James Maze Kilner.
Weighing machines - - - - (*Communicated by Camille Rolland.*)	289	1st Feb. 1870	Robert Boyd.
An improved machine or apparatus for effecting calculations, applicable to weights, measures, time and money.	323	4th Feb. 1870	John Sellers.
An improved micrometric steelyard - - (*for weighing jewellery, &c.*) (*Communicated by Louis Jean Baptiste Saladin.*)	839	21st March 1870	William Robert Lake.
An improved weighing cart or carriage for ascertaining the weight of coal, wood or other wares.	884	25th March 1870	Clovis Jean.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WEIGHING-MACHINES, &c.—*continued.*			
A new or improved apparatus for registering or indicating figures or numbers, applicable to seats of chairs, weighing-machines, and other useful purposes. (*for coal and corn metering.*)	950	31st March 1870	Joseph Bailey.
Improvements in weighing-machines, and in combining machinery for hoisting and weighing goods.	962	2nd April 1870	Andrew Ody.
An improved automatic machine for weighing and registering grain and other substances.	1787	23rd June 1870	Henry Pooley. Thomas Roberts.
Weighing-machines	2022	18th July 1870	William Roberts. William Stroudley.
Weigh-beams for platform weighing-machines (*Communicated by Michael Kennedy.*)	2103	26th July 1870	John Henry Johnson.
Mechanical telegraphs and liquids to be used therewith, which fluid is also applicable as a power transmitter for other purposes, for the making of liquid joints and other purposes where it is desirable to use a liquid that does not readily congeal or evaporate. (*for weighing machinery.*)	2384	1st Sept. 1870	Charles Henry Chadburn. William Chadburn.
Weighing-machines, involving means for counting, registering, printing, adding and other operations connected with weighing-scales.	2456	10th Sept. 1870	Henry Fairbanks.
Spring weighing scales (*Communicated by Jean Victor Mathivet.*)	2682	6th Oct. 1870	George Haseltine.
Apparatus for weighing and measuring quantities and registering the same.	3000	16th Nov. 1870	Henry Lyon.
An improved combined hopper and weighing-machine for shipping coal and other similar materials.	3236	9th Dec. 1870	John Hopkinson.
WHEELS FOR CARRIAGES AND VELOCIPEDES; RAILWAY WHEELS; WHEEL TIRE, &c.			
Improvements in tramways and in vehicles to be run thereon. (*Communicated by William Judson Addis.*)	90	12th Jan. 1870	Benjamin Joseph Barnard Mills.
Mowing and reaping machines (*Communicated by George Washington Newton Yost, Franklin William Andrews, Lyman Stewart and Henry Allerton Hutson.*)	213	22nd Jan. 1870	William Robert Lake.
Method of applying anti-friction rollers to wheels and other parts of machinery. (*Communicated by William Bonham Scott.*)	221	25th Jan. 1870	John Henry Johnson.
Construction and manufacture of wheels for vehicles. (*for velocipedes.*)	245	27th Jan. 1870	John Howard Kidd.
Machines for putting together the parts of cart and other wheels.	246	27th Jan. 1870	Jabus Stanley James. Henry Wilson.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WHEELS, &c.—*continued.*			
Improvements in permanent way and in wheels to be used therewith. (*Communicated by Alphonse Mention.*)	248	27th Jan. 1870	John Bevan Smith.
Improvements in railways and in rolling stock to be used therewith.	388	10th Feb. 1870	Henry Temple Humphreys.
Mode of reducing the friction of pivots turning on oscillating levers, which system is also applicable to wheeled vehicles, especially waggons or railway trucks.	391	10th Feb. 1870	Gilbert Eguillon.
Railways, tramways, common roads, and machines and vehicles to run thereon. (*spring tired wheels.*)	512	22nd Feb. 1870	William Bridges Adams.
Apparatus for lifting potatoes and other roots - (*construction of bearing and driving wheels.*)	560	25th Feb. 1870	George Hey Harrison.
Construction of the running wheels of carriages and other vehicles mounted on wheels, and wheels and riggers used in machinery.	579	26th Feb. 1870	Thomas Coles.
Improvements in the manufacture of wrought-metal wheels, and in machinery for the same. (*Communicated by Claude Brunon, Barthelemy Brunon and Gabriel Brunon.*)	583	26th Feb. 1870	Alexander Melville Clark.
Construction of wheel tyres - - -	599	1st March 1870	Louis Sterne.
Railway carriage wheels - - - - (*Communicated by Hiram Washington Moore, Francis Bloodgood, Charles Boughton Wood and Frederick Wood.*)	605	1st March 1870	Alexander Melville Clark.
Improvements in the manufacture of wheel tires, hoops, bands and such like articles, and in the machinery or apparatus employed therein. (*Communicated by Hippolyte Ulysse Petin and Jean Marie Gaudet.*)	710	10th March 1870	John Henry Johnson.
Wheels - - - - - -	820	19th March 1870	William Alexander Lyttle.
Improvements in wheels for rail or tramway locomotive engines and carriages or vehicles, and in the permanent way for the same.	827	19th March 1870	Robert Francis Fairlie.
Wheels for railway engines and carriages - - (*Communicated by James Atkins Woodbury.*)	837	21st March 1870	William Robert Lake.
Improvements in the manufacture of wheel tyres, and in the machinery or apparatus employed therefor.	848	22nd March 1870	Daniel Gray.
Improvements in the manufacture of bars, plates and sheets of steel, or steel and iron combined, and in the process of welding employed in such manufacture. (*for waggon tires, car wheels, &c.*) (*Communicated by John Absterdam.*)	856	23rd March 1870	William Robert Lake.
Mechanism for diminishing friction - - (*in carriage wheels.*) (*Communicated by Jean Baptiste Léopold Favier-Lagaye and Ernest Auguste Verleye.*)	942	31st March 1870	William Robert Lake.
Construction of carriages, vehicles and velocipedes	1039	8th April 1870	André Etienne.
Wheels for carriages, waggons, carts and other vehicles.	1095	14th April 1870	Laurence Stewart.
Wheels for carriages - - - -	1151	20th April 1870	William Catt. Charles Shorten Catt.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WHEELS, &c.—*continued.*			
Improvements in apparatus for preventing railway carriages running off the line, in wheels for enabling them to pass round curves, in operating points or switches automatically, and in securing rails to chairs or supports.	1269	3rd May 1870	John Tiranoff.
Traction and locomotive engines - - (*Communicated by James K. Lake.*)	1270	3rd May 1870	Alexander Melville Clark.
Improvements in wheels for carriages, vehicles and locomotive apparatus, and in wheels and pulleys for driving machinery.	1279	4th May 1870	Henry Kinsey.
An improved arrangement of apparatus for diminishing the friction of spindles, axles and other similar rotating bodies. (*and naves of wheels.*) (*Communicated by Ernest Maxime Theodore Cayeux.*)	1462	20th May 1870	Thomas James Smith.
Wheels for traction steam-engines and other heavy vehicles.	1517	25th May 1870	James Shanks.
Wheels - - - - - -	1589	1st June 1870	John Hornsby Carruthers. Stephen Alley.
Improvements in carriage and other wheels, being also applicable to horse-shoes.	1642	7th June 1870	Barnard Holt.
Improvements in railway and other carriage wheels by the application of vulcanised india-rubber or any compound thereof.	1703	14th June 1870	William Aubrey Chandler.
Improvements in railways and in the engines and carriages to run thereon. (*Communicated by Francois Maurice Marin.*)	1771	21st June 1870	John Henry Johnson.
Making of carriage, cart and other wheels - -	1824	27th June 1870	Joseph Butterworth. John Backhouse Hutchinson.
New or improved means of facilitating and effecting the traction of wheel carriages drawn by horse-power.	1898	5th July 1870	Ernest Leslie Macdonell.
Construction of wheels - - -	1920	7th July 1870	John James McGrath.
Wheels to be used on railways - - (*Communicated by Alexander Peyman and John Thomas Chaplin.*)	1936	8th July 1870	Philip Chaplin.
Improvements in portable or moveable railways, and in the adaptation of the same to various constructions of wheeled carriages. (*see* "CARRIAGES.")	1948	9th July 1870	Edmund Leahy.
Improvements in rails for railways and tramways, and in wheel tyres for railways and tramways. -	2008	15th July 1870	John Wakefield. Daniel McDowell.
Railway and other wheels - - -	2031	19th July 1870	William Owen.
Wheels for railway carriages and other vehicles - (*Communicated by Almond Franklin Cooper.*)	2055	21st July 1870	William Robert Lake.
Manufacture of railway wheels, also in the moulds and the converting furnaces to be used in the manufacture of railway wheels. (*Communicated by John Blake Tarr.*)	2102	26th July 1870	Alfred Vincent Newton.
Improvements in carriages for running on circular railways, and in the means or method of propelling the same.	2222	10th Aug. 1870	Abraham Waddington.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WHEELS, &c.—*continued.*			
Construction of wheels - - -	2226	10th Aug. 1870	Woodford Pilkington.
Improvements in the construction of wheels, applicable chiefly to velocipedes, and in the driving gear of such vehicles. - - - -	2236	11th Aug. 1870	James Starley. William Hillman.
Construction of elastic tyres for wheels - -	2246	12th Aug. 1870	Isaac Blue Harris.
Wheels of traction and other carriages or vehicles -	2296	20th Aug. 1870	William Firth.
Improved means or apparatus for enabling tramway and other omnibuses or vehicles to run upon and leave tramrails at any point. - - (*making wheels without flanges.*)	2357	27th Aug. 1870	George Gore. James Meacock.
Improved construction of wheels for gun carriages, carts and other vehicles. - - -	2396	2nd Sept. 1870	Herbert Holmes. Arthur Holmes.
Reaping and mowing machines - - (*Communicated by Walter A. Wood.*)	2443	9th Sept. 1870	James Theodore Griffin.
Construction of elastic tyres for carriage wheels -	2452	10th Sept. 1870	William Erskine Bartlet.
Driving wheels applicable to traction engines -	2542	22nd Sept. 1870	Benjamin Walker. John Frederick Augustus Pflaum.
Means of securing elastic tyres to wheels -	2620	1st Oct. 1870	Louis Sterne.
Improvements applicable to the tyres of the running wheels of road locomotives. - -	2627	3rd Oct. 1870	Thomas Aveling. David Greig.
Improvements in and connected with elastic wheel tires.	2630	4th Oct. 1870	Robert William Thomson.
India-rubber or caoutchouc tires for wheels -	2746	19th Oct. 1870	William Francis Reynolds. Jonathan Aldous Mays.
Improved means or machinery for bending and forming tires or hoops for wheels of carts, waggons and carriages, or other similar purposes.	2777	21st Oct. 1870	George Taylor.
Fixing india-rubber tires, and tires of any compressible materials, to wheels of bicycles, velocipedes, bath chairs and other light wheels for locomotion.	2791	24th Oct. 1870	John Wilkins.
Ploughs - - - - - (*and plough wheels.*)	2847	29th Oct. 1870	Richard Hornsby. James Edwin Phillips.
Wheels of vehicles to run on common roads -	2882	2nd Nov. 1870	Alexander McNeile. James Slater.
Machinery for cutting or shaping wood - - (*forming spokes of wheels.*)	3029	18th Nov. 1870	Allen Ransome.
Construction and mode of making wheels for velocipedes, carriages and other vehicles.	3152	1st Dec. 1870	William Henry James Grout.
Construction of road wheels for road steamers and traction engines.	3219	8th Dec. 1870	Vaughan Pendred.
An entire new system for constructing permanent way, with improved method of constructing and working rolling stock in connection therewith.	3230	9th Dec. 1870	Edmund Beatty Lockyer.
An improved wheel for traction engines - -	3342	21st Dec. 1870	Angelo Sedley.
Travelling wheels for road locomotives - -	3371	24th Dec. 1870	Nathaniel Clayton. Joseph Shuttleworth.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WHEELS FOR MACHINERY; COGWHEELS, PULLEYS, CAMS, &c.			
Improvements in the manufacture of compound rivetted bands of iron, steel or other metal to be used as a substitute for wire ropes, and in the formation of pullies to be used therewith.	1	1st Jan. 1870	Charles Hodgson.
Knitting-machines - - - - - (*construction of cam wheel.*)	220	25th Jan. 1870	George Edward Harding. Peter Wright.
Method of applying antifriction rollers to wheels and other parts of machinery. (*Communicated by William Bonham Scott.*)	221	25th Jan. 1870	John Henry Johnson.
An improved friction clutch - - - (*Communicated by Francis Ashbury Pratt and Samuel Coit.*)	319	3rd Feb. 1870	William Robert Lake.
Looms for weaving - - - - (*Communicated by John A. Bassett and John Robinson Norfolk.*)	401	10th Feb. 1870	William Robert Lake.
Machinery for excavating coal, stone and other minerals, and for compressing air. - - (*friction clip pulley.*)	571	26th Feb. 1870	Samuel Firth. Frederick Hurd.
Construction of the running wheels of carriages and other vehicles mounted on wheels, and wheels and riggers used in machinery.	579	26th Feb. 1870	Thomas Coles.
Governors for steam and other engines - - (*vane wheel band pulley.*)	582	26th Feb. 1870	William Clark.
Differential pulley blocks and other apparatus for moving heavy bodies.	777	16th March 1870	Peter Murray.
Making horse shoes - - - -	780	16th March 1870	James Townsend Walker.
Improvements in apparatus for getting or cutting minerals and in apparatus for compressing air. (*jib end and outer pulleys.*)	815	19th March 1870	Alexander Morton Strathern.
Wheels - - - - - - -	820	19th March 1870	William Alexander Lyttle.
Improvements in velocipedes, parts of which improvements are applicable to machinery generally. (*wheel or pulley.*)	979	2nd April 1870	Alfred Milnes Hobson. Edward Cozens Smith.
Mast-head and other hoisting blocks - - (*construction of ratchet pulleys.*)	1080	13th April 1870	William Angus.
Mowing and reaping machines - - - (*gear wheels.*) (*Communicated by Rudolf Eickemeyer.*)	1170	22nd April 1870	George Tomlinson Bousfield.
Machinery for knitting stockings or various other articles. (*cam wheels.*) (*Partly communicated by George M. Patten.*)	1171	22nd April 1870	James Rand Clark.
Improvements in mills for grinding cattle food and other materials and in apparatus connected therewith. - - - - - (*making the driving pulley of leather.*)	1189	23rd April 1870	Walkden Thompson. Thomas Stather.
Apparatus for saving life and property from fire, applicable also for lowering weights for other purposes. (*pulley block.*)	1259	2nd May 1870	Edwin Robert Wethered.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WHEELS, &c.—*continued.*			
Rack pulleys for the cords of window-blinds, maps and other articles.	1286	3rd May 1870	Samuel Taylor.
Improvements in wheels for carriages, vehicles and locomotive apparatus, and in wheels and pulleys for driving machinery.	1279	4th May 1870	Henry Kinsey.
Construction of segmental toothed wheels - -	1338	11th May 1870	Peter Rothwell Jackson.
Machines for and the manufacture of knitted goods (*needle actuating cam.*)	1428	18th May 1870	David McColley Weston.
Improvements in machinery for corrugating and moulding sheet metal, which improvements are also applicable for other purposes. (*forming teeth on gear wheels.*) (*Communicated by Asa Johnson and William Thornton Still.*)	1566	28th May 1870	Alexander Melville Clark.
Mode of connecting wheels and other articles to their shafts and for coupling shafts.	1939	8th July 1870	William Randal Harris.
Differential pulley blocks and other apparatus for moving heavy bodies.	2501	16th Sept. 1870	Peter Murray.
An improved machine for polishing metal and other surfaces. (*Communicated by Peter Fitz Randolph, Augustus Knapp Van Horne and Henry Vroom Voorhees.*)	2615	1st Oct. 1870	George Haseltine.
Improvements in the manufacture of boots and shoes and other coverings for the feet, parts of which improvements are also applicable in the manufacture of millstraps or bands, harness, hose pipes and other similar articles, and in the machinery, apparatus or means to be used for effecting such purposes.	2698	12th Oct. 1870	Thomas White.
Construction of self-lubricating hubs or bosses for pulleys and wheels.	2704	13th Oct. 1870	David McColley Weston.
Bushes of pulley blocks for ships or vessels -	2868	31st Oct. 1870	John Brooks.
Improvements in boxes and bearings for axles and other shafts and in compositions to be applied thereto. (*applicable to loose pulleys.*) (*Communicated by Elisa Dexter Murfey.*)	2879	1st Nov. 1870	John Henry Johnson.
Apparatus for raising and lowering weights and for reducing speed.	3009	17th Nov. 1870	Jonathan Pickering.
WINDING, REELING AND BALLING YARN AND THREAD.			
Machinery for winding yarn or thread on to bobbins, spools or other similar surfaces.	48	6th Jan. 1870	William Weild.
Machines for polishing yarns or threads - - (*winding the yarns.*) (*Communicated by Sixte Pierre Villain.*)	417	12th Feb. 1870	William Spence.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WINDING, &c.—*continued.*			
Machinery or apparatus for reeling slivers of wool direct from the gill box. - - - (*see* "SPINNING.")	546	24th Feb. 1870	Edward Duce. Samuel Noble.
Improvements in the manufacture of candles and in apparatus to be employed therein. (*winding the wick material.*)	835	21st March 1870	Jesse Ascough.
Machinery for doubling and winding cotton and other yarns and threads.	899	28th March 1870	Robert Smith.
An improved machine or apparatus for winding yarns or threads on bobbins. (*Communicated by Monsieur Jules Elie Plessier.*)	991	5th April 1870	Hector Auguste Dufrené.
Improvements applicable to winding engines for the prevention of winding over the headstocks, also applicable to other stationary engines where the weight is taken off suddenly. (*see* "MINING.")	1011	6th April 1870	James Sharrocks.
Apparatus for lubricating and covering the spindles employed in machinery for preparing, spinning, doubling and winding fibrous materials.	1059	11th April 1870	John Billington Booth.
Improvements in sewing machines and in machinery or apparatus for winding the thread on to the spools or bobbins.	1592	1st June 1870	William Winter.
Machinery for winding cops for weft or warp or other purposes.	1688	11th June 1870	John Combe.
An improved method of reeling silk - -	2076	23rd July 1870	Louis Eugene Mouline.
Machinery for reeling yarns - - -	2276	17th Aug. 1870	Ferdinand Ziffer.
An improved apparatus for damping textile threads or yarns in the processes of spinning, winding, reeling and warping or other similar processes.	2623	3rd Oct. 1870	Edmund Leach.
Improvements in combing and preparing cotton, wool and other fibrous substances and in engines or machines in connection therewith. (*balling head.*) (*Communicated by Edouard Tavernier.*)	2691	12th Oct. 1870	Louis Ferdinand Tavernier.
Machinery for preparing, spinning, winding and doubling cotton and other fibrous materials, partly applicable to lubricating upright shafts. -	2700	13th Oct. 1870	Robert Lakin. William Henry Rhodes. John Carpenter.
Apparatus for winding thread on to bobbins -	2764	20th Oct. 1870	William Clark.
Improvements in machinery for winding cops and in shuttles for weaving cops.	3185	3rd Dec. 1870	John Combe.
Sewing-machines - - - - (*winding the yarn for the shuttle.*)	3320	20th Dec. 1870	William Wemyss Kennedy.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WINDOW BLINDS, SUN BLINDS, FIRE-SCREENS.			
Improvements in shutters and blinds for windows, doorways and other apertures, and in the means for adjusting the same.	91	12th Jan. 1870	Frederick Hartt Knevitt.
Rack pulleys for the cords of window-blinds, maps and other articles.	1266	3rd May 1870	Samuel Taylor.
Venetian blinds for windows and other like purposes	1720	16th June 1870	Howard Busby Fox.
Venetian blinds and shutters - - -	1913	6th July 1870	Jesse Ascough.
An improved ventilating roller window-blind -	2290	19th Aug. 1870	Arthur Cooper.
An improvement in window blinds - -	2309	22nd Aug. 1870	William Thomson.
Certain improvements in fittings connected with the action of windows, sunshades and articles of a similar nature, a portion of the improvements being also applicable for other purposes. -	2567	26th Sept. 1870	Thomas Mills Nall. Samuel Newton.
Improvements in or applicable to machinery or apparatus for cutting wood to any required pattern or design. (*blindmakers' laths.*)	2671	8th Oct. 1870	William Ellis.
Improved means of and apparatus for preventing the entrance of flies and other insects and reptiles into rooms or apartments of buildings, ships and carriages. (*wire blind or screen.*)	2822	27th Oct. 1870	Sarah Beauchamp Bush.
Improvements in the construction of metal gates, applicable also to tie rod couplings, hinges for shop-blind arms and other useful purposes.	2878	1st Nov. 1870	Stephen Tuddenham.
Mechanism used for working venetian blinds and articles of such like character.	2885	2nd Nov. 1870	George Hatton.
Improvements in the manufacture of corrugated and embossed glass and in the application of the same to the purposes of illumination. (*Communicated by Theodore Hyatt.*)	3112	28th Nov. 1870	John Henry Johnson.
Manufacture or production of plain and fancy nets and laces. (*and short window blinds.*)	3158	1st Dec. 1870	William Carter.
WINDOWS AND SASHES; WINDOW-FRAMES AND SHUTTERS.			
Improvements in shutters and blinds for windows, doorways and other apertures and in the means for adjusting the same.	91	12th Jan. 1870	Frederick Hartt Knevitt.
An improved bolt or fastening applicable to doors and windows and other similar purposes.	428	14th Feb. 1870	Edward Wyburd Furrell.
Ships' illuminators or scuttles - -	619	2nd March 1870	William Darley.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WINDOWS, &c.—*continued.*			
Apparatus for the preservation of life from fire (*adapted to facilitate window cleaning.*)	774	16th March 1870	William Morgan.
Improved means for rendering watertight dock gates, ships' ports or other like openings, also applicable to windows, doors and other like openings.	912	29th March 1870	Robert Saunders.
Sash fasteners (*Communicated by Edward Blythe.*)	1003	6th April 1870	David Monroe Childs.
An improved apparatus to be used in window cleaning and for other similar purposes.	1038	8th April 1870	Charles Francis Anderson.
Carriage windows	1087	13th April 1870	John Philipson.
Improved apparatus for regulating the lift of railway and other carriage windows.	1284	5th May 1870	George Ingram.
Fastenings for windows, doors and other similar purposes.	1346	11th May 1870	Joseph Nicholson. John Ward Jones.
An improved window fastener (*Communicated by William L. Clark.*)	1361	12th May 1870	Charles Churchill.
A new and improved apparatus for holding window sashes or shutters. (*Communicated by Samuel Lewis Loomis.*)	1412	17th May 1870	Henry Bickerton Greenwood.
Mechanism for fastening French or folding windows at any desired point when partially opened. (*Communicated by Edward Vansittart Neale.*)	1501	24th May 1870	Bristow Hunt.
Hinges (*for windows.*)	1630	6th June 1870	William McLean.
Improved means of protecting shop fronts, windows, doors and other parts of buildings or structures.	1648	7th June 1870	Frederick Schäfer.
Improvements in the means or apparatus employed for retaining the windows of railway or other carriages or other windows when raised or lowered in any desired position.	1714	15th June 1870	Michael Jacob.
Window sashes and parts connected therewith	1788	23rd June 1870	Alexander Walker.
Window sash and casement fasteners	1929	7th July 1870	Henry James Crockett.
Window sash fasteners	1959	11th July 1870	Ethelbert Holborow.
An improved spring-fastener for railway carriage and other windows.	2043	20th July 1870	John Edward Makins.
Apparatus or machinery for raising and lowering revolving shutters.	2113	27th July 1870	Thomas Kirby. Richard Brady. William Batison Kirby.
Window sash and casement fasteners	2215	9th Aug. 1870	John Banks.
Window sash and casement fasteners	2428	7th Sept. 1870	John Banks.
Certain improvements in fittings connected with the action of windows, sunshades and articles of a similar nature, a portion of the improvements being also applicable for other purposes.	2567	26th Sept. 1870	Thomas Mills Nall. Samuel Newton.
Carriage windows	2599	30th Sept. 1870	John Philipson.
Construction of illuminating and ventilating roofs and gratings or plates, parts of which are applicable to ordinary footways and carriage ways. (*Communicated by Theodore Hyatt.*)	2755	20th Oct. 1870	John Henry Johnson.

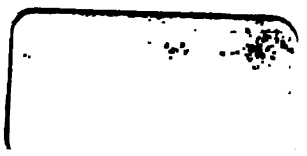
Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WINDOWS, &c.—*continued.*			
Improved means of and apparatus for preventing the entrance of flies and other insects and reptiles into rooms or apartments of buildings, ships and carriages. (*wire blinds in lieu of glass in buildings, ships, carriages, &c.*)	2822	27th Oct. 1870	Sarah Beauchamp Bush.
An improved means or apparatus for raising and lowering windows, particularly applicable to railway and other carriage windows. - -	2896	3rd Nov. 1870	John Jones. Howard Busby Fox.
Construction of bow or projecting windows -	3096	25th Nov. 1870	Joseph Perrett, the younger.
Improvements in the manufacture of corrugated and embossed glass and in the application of the same to the purposes of illumination. (*Communicated by Theodore Hyatt.*)	3112	28th Nov. 1870	John Henry Johnson.
Window, door and table fastener - -	3168	2nd Dec. 1870	Julius Augustus Faulkner. James Henry Starling.
Illuminating gratings for roads, streets and other ways and for floors and roofs generally. (*Communicated by Theodore Hyatt.*)	3195	5th Dec. 1870	John Henry Johnson.
Metallic bars or clips to be used for roofing and glazing purposes.	3216	7th Dec. 1870	Thomas Alfred Bickley.
An improved weather strip or draught excluder for doors and windows.	3345	21st Dec. 1870	William Cook.
WIRE-WORKING; WIRE-ROPES; TELEGRAPH CABLES.			
Improvements in the manufacture of compound rivetted bands of iron, steel or other metal to be used as a substitute for wire ropes, and in the formation of pullies to be used therewith.	1	1st Jan. 1870	Charles Hodgson.
Wire ties for securing bales of cotton, hay or other material. (*Communicated by Edwin S. Lenox.*)	16	3rd Jan. 1870	William Robert Lake.
A new or improced process for cleansing, drawing and tinning wire. (*Communicated by Jean Baptiste Auguste Daubié.*)	188	21st Jan. 1870	Thomas James Smith.
New or improved modes and means of covering and insulating the wires of electric telegraphs.	272	31st Jan. 1870	Robert Dick.
Improvements applicable to telegraph purposes -	274	31st Jan. 1870	Thomas Walker.
Machinery for covering telegraph wires - -	344	7th Feb. 1870	Henry Brooks. Adam Brooks. Thomas Bestwick. William Bestwick.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WIRE-WORKING, &c.—*continued.*			
An improved method of constructing submarine telegraph cables for the support of insulated conductors for communicating intelligence between nations and foreign countries by electricity.	409	11th Feb. 1870	James Story.
Electric cables or conductors - - -	627	3rd March 1870	Samuel Elkens Phillips.
Rotary corn screens for dressing and separating grain. - - - - -	776	16th March 1870	William Rainforth, senior. William Rainforth, junior.
Production of compounds containing xyloidine - (*for covering telegraph wires.*)	787	16th March 1870	Daniel Spill.
Machinery or apparatus for the manufacture of ropes, cords and wire ropes.	814	18th March 1870	William Guest.
Doffers of condensing carding engines and means or apparatus for effecting the same. (*cutting out card teeth to form grooves.*)	833	21st March 1870	Samuel Brooke.
Improvements in the manufacture of plait and in fastenings therefor, which improvements are applicable for jewellery and other purposes. (*of wire, &c.*)	952	31st March 1870	Robert Atkin.
An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation, and preserving wood and other materials. (*used on iron and copper wire ropes.*)	986	4th April 1870	Achille Thomas-Anquetil.
Improvements in the manufacture of ropes or cables to be used for telegraphic or other purposes, and in machinery for producing such cables or ropes.	1192	25th April 1870	George Fenwick.
Improvements in rolling metallic rods or wire and in machinery employed for that purpose.	1454	19th May 1870	James Partridge Blake.
Wire ties for securing bales of hay, cotton and other merchandize.	1464	20th May 1870	Daniel Cole Lowber.
Compounds for insulating telegraph wires, the manufacture of flexible tubing and other like purposes.	1626	4th June 1870	Daniel Spill.
Machinery or apparatus for testing strain or pressure applied to solid bodies, and for other like purposes. (*wire.*) (*Communicated by Jules Auguste Desgoffe.*)	1649	7th June 1870	William Robert Lake.
Muzzles for dogs - - - - -	1692	13th June 1870	Frederick William Granham. Benjamin Butterfield.
Machinery for manufacturing wire ties for securing bales of hay, cotton and other merchandize.	1695	13th June 1870	Daniel Cole Lowber.
Cards employed in the carding of cotton and other fibrous materials. - - - - -	2001	15th July 1870	George Ashworth. Elijah Ashworth.
The employment of an improved material for forming the bodies of hats or other coverings for the head. (*employing wire gauze.*) (*Communicated by Auguste Leneveu.*)	2108	27th July 1870	Baldwin Fulford Weatherdon.
Treating metal wire to prevent loss of heat during rolling or reducing.	2243	12th Aug. 1870	John Matthew Habershon.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WIRE-WORKING, &c.—*continued.*			
Machinery for making banding (*of wire.*)	2254	13th Aug. 1870	Thomas Unsworth. Edward Whalley.
Manufacture of marine telegraph cables	2367	29th Aug. 1870	Matthew Gray. Frederick Hawkins.
Machinery or apparatus for forming, hardening, tempering, straightening and cutting paragon or other wires to be used for ribs and stretchers of umbrellas or other useful purposes.	2420	6th Sept. 1870	Charles Bottom. Joseph Hallam. Samuel Westley Hallam.
An improved screen-wire for dressing wheat and other grain, which web is also applicable to dressing sieves generally, and for the floors of malt and other drying kilns.	2429	8th Sept. 1870	William Silcock.
An improved apparatus for forming wire into spiral coils.	2508	17th Sept. 1870	Hamilton E. Towle.
Manufacture of wire for electric telegraph conductors.	2525	20th Sept. 1870	James Balleny Elkington.
Improved apparatus and fuel for facilitating the soldering of the joints of electric telegraph and other wires.	2658	7th Oct. 1870	John William Fletcher.
Improved means of and apparatus for preventing the entrance of flies and other insects and reptiles into rooms or apartments of buildings, ships and carriages. (*wire blind curtain, &c.*)	2822	27th Oct. 1870	Sarah Beauchamp Bush.
Improvements in the construction of bridges, viaducts, roofs and floorings, and in apparatus for the purpose. (*use of wire ropes.*)	2855	31st Oct. 1870	Julius Roberts.
Improvements in the manufacture of wire, which improvements are also applicable in the manufacture of other metallic articles, in the production of which the process of annealing forms a part.	2981	14th Nov. 1870	Richard Hill. Albert Thomas Ward. Carl Friedrich Claus.
Wire bands or fasteners for bales or parcels (*Communicated by Edwin Sewall Lenox.*)	3260	13th Dec. 1870	Thomas James Smith.
Improvements in insulating telegraph wires, and in the machinery or apparatus to be employed therein.	3314	19th Dec. 1870	Joseph Rogers.
Formation of concrete works (*cement and wire.*)	3398	30th Dec. 1870	Philip Brannon.
WINE BINS.			
A new or improved apparatus or tile for forming wine bins or receptacles for wine or other bottles.	2165	3rd Aug. 1870	George Henry Pierce.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
Wood and Veneers; Artificial Wood.			
Machinery or apparatus for cutting wood into shreds or shavings to be used in the manufacture of paper. - - - -	129	15th Jan. 1870	John Robinson. John Smith.
Improvements in wooden pavements and in cutting the blocks therefor. (*Communicated by William Wilmot Ballard.*)	130	15th Jan. 1870	Alexander Melville Clark.
Improvements in the production of photographic pictures or designs on veneers and solid wood, and in the application thereof to cabinet work, furniture, fancy wood articles and other decorative purposes. - - - -	383	9th Feb. 1870	Arthur Foley. Henry Foley.
Machinery for cutting and shaping wood - -	439	15th Feb. 1870	Archibald Neill.
Railway carriage wheels - - - - (*introduction of dovetailed wooden blocks.*) (*Communicated by Hiram Washington Moore, Francis Bloodgood, Charles Boughton Wood, and Frederick Wood.*)	605	1st March 1870	Alexander Melville Clark.
Improvements in the manufacture of pulp for making paper or papier-maché and in the apparatus employed therein.	675	7th March 1870	William Law.
Treatment of fibrous materials suitable for the manufacture of paper. (*wood or woody fibres.*)	748	14th March 1870	Thomas Routledge.
Improved machinery or apparatus and processes for the manufacture of paper and other pulp from wood and other fibrous materials.	750	15th March 1870	John Felber.
Improvements in the construction of roads and ways, and in the materials employed therein, which materials are also applicable to other purposes for which asphalt is generally employed. (*disintegrated wood.*) (*Communicated by Leopold Wiart.*)	784	16th March 1870	John Henry Johnson.
Improvements in machinery for turning, shaping, cutting and boring wood and other substances, and in machinery for preparing cutters or tools for turning.	933	31st March 1870	Jonathan Sellers.
Ornamenting wood, leather and other materials for the manufacture of fancy boxes, furniture, pannellings, and for other ornamental purposes.	1058	11th April 1870	Archibald Brown.
Producings engravings on glass, metals, wood and other substances.	1102	14th April 1870	Amédée Auguste Wilbaux.
Machinery or apparatus for boring, drilling and turning wood or metal. - - -	1140	19th April 1870	David Sowden. Reuben Calvert Stephenson.
Production of raised and sunken designs in imitation of carving in wood, ivory, bone and other materials.	1159	20th April 1870	George William Ley.
Machinery for shaping wood and other materials -	1395	16th May 1870	Henry Augustus Biertumpfel. William James Loveday.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WOOD, &c.—*continued.*			
A new and improved mode of manufacturing wooden floors and wainscots. (*Communicated by Edouard Maitre.*)	1482	23rd May 1870	Henri Adrien Bonneville.
Treatment of esparto grass and other fibrous materials. (*and wood.*)	1525	26th May 1870	George Lunge.
Staining and ornamenting wood - - -	1689	11th June 1870	Andrew Fingar Brophy.
Means and apparatus for cutting type, and carving, moulding and ornamenting wood, metal, stone and other materials. - - - -	1776	22nd June 1870	William John Cunningham. Alphonso Dabb.
Improvements in treating and distilling petroleum, and in apparatus employed therein. (*oiling wood.*) (*Communicated by James Laws Heverin and James Lloyd Bewley.*)	1823	27th June 1870	Robert Kell.
Improvements in making wooden skewers and in the machinery, apparatus, and means to be employed therein. - - -	1825	27th June 1870	Joseph Butterworth. John Backhouse Hutchinson.
Apparatus for cutting wood into small strips, filaments or shavings.	1828	27th June 1870	William Riddell.
Wood-screws - - - - - (*see* "NAILS")	1847	29th June 1870	George Colin Davies.
Improvements in the production of pulp, suitable for the manufacture of paper from wood, straw, grass and other vegetable matter. (*Communicated by August Deininger.*)	2310	22nd Aug. 1870	Frederick Arthur Paget.
Machinery or apparatus for cutting wood into shreds or shavings, to be used in the manufacture of paper. - - - -	2321	23rd Aug. 1870	John Robinson. John Smith.
Machinery for cutting dovetail mortises and dovetail pins or tenons.	2471	14th Sept. 1870	Robert Thompson.
Improvements in or applicable to machinery or apparatus for cutting wood to any required pattern or design. (*veneers.*)	2671	8th Oct. 1870	William Ellis.
An improved process for making pulp or half-stuff from wood and other vegetable fibres. (*Communicated by Thomas Levens.*)	2695	12th Oct. 1870	Amasa Mason.
Certain improvements in the mode of and apparatus for charring wood, peat, bones and other vegetable and animal matters.	2714	14th Oct. 1870	Frederick Ludewig Hahn Danchell.
Slide rests for producing geometrical figures and designs. (*on wood.*)	2830	27th Oct. 1870	Richard Pudsey Dawson.
Preparation and use of peat or turf, and bituminous, resinous and ligneous substances, as fuel and for other purposes. (*artificial wood.*)	2831	27th Oct. 1870	Jacob Geoghegan Willans.
Machinery for cutting or shaping wood. - - (*cutting veneers, tenoning.*)	3029	18th Nov. 1870	Allen Ransome.

Subject-matter of Patent.	Number of Patent.	Date.	Name of Patentee.
WOOD, &c.—*continued.*			
Improved method of treating wood and other similar fibrous substances for the manufacture of half stuff and paper. - - - -	3148	1st Dec. 1870	Thomas Wrigley. Henry Bruce. Carl Dietrich Julius Seitz.
Improvements in paper stock and means or method of making paper pulp from wood, straw, cane, esparto grass, flax, flax tow, hemp, hemp tow, jute, jute tow, Manilla rope or Manilla tow, and all analogous material or vegetable substances, and in the treatment of materials used therein, and in apparatus for treating the same. (*Communicated by Morris Longstreth Keen.*)	3392	29th Dec. 1870	Samuel Armstrong Walsh.
For sawing wood, *see* "CUTTING." For preserving timber, *see* "PRESERVING WOOD."			

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